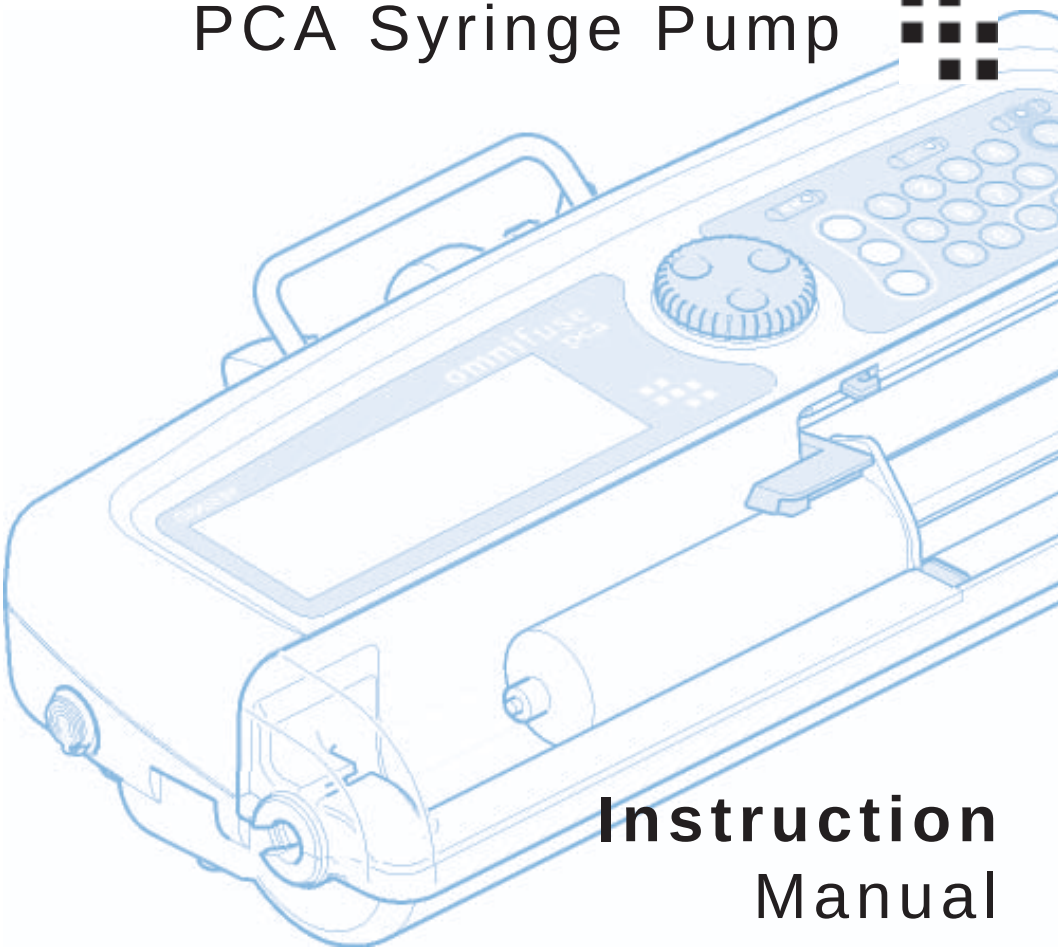
GRASEBY

omnifuse

PCA Syringe Pump



Instruction
Manual

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Using this manual

This manual covers all aspects of using the Omnifuse PCA pump:

Warnings and Cautions

This gives a list of Warnings and Cautions which you must be aware of before using the pump. These are repeated on the relevant pages in the manual.

Table of Contents

Use the table of contents to see the structure of the manual and the headings in the order in which they appear.

Chapter 1, Introduction

This introduces the Omnifuse PCA pump. It provides a high-level description of the features of the pump.

Chapter 2, Basics

This chapter covers the external features of the pump, and contains detailed explanations of the techniques for using the pump, for example, switching on, loading or changing a syringe and operating the patient handset. It also covers the care and maintenance of the pump.

Chapter 3, PCA Programming

This chapter describes how to program the Omnifuse PCA pump. It explains how to use the special pump features designed for the PCA environment.

Chapter 4, Troubleshooting

This chapter gives you a list of the warnings and alarms that may be displayed by the Omnifuse, and tells you how to handle them.

Specifications and Standards

This lists the specifications for the Omnifuse PCA pump and the standards with which it complies.

Index

At the end of the manual is an index which provides an alphabetical list of key words, and cross-references these to the relevant pages in the manual.

Warnings/Cautions

Warnings

Warnings tell you about dangerous conditions that could lead to death or serious injury to the user or patient, that can occur if you do not obey all of the instructions in this manual.

1. **WARNING: To avoid over- or under- infusion, always verify that the brand and size of the loaded syringe are the same as the brand and size displayed on the screen before starting an infusion. Failure to do so may result in an inaccurate delivery of medication, resulting in patient injury or death.**
2. **WARNING: To avoid incorrect or inappropriate configuration of the pump, the Configuration menu must only be selected by qualified persons or authorised personnel. Incorrect pump configuration could lead to inappropriate infusion resulting in patient injury or death.**
3. **WARNING: This equipment is not suitable for use in the presence of flammable anaesthetic mixtures with air, oxygen, or nitrous oxide. The use of the device in presence of such mixtures may lead to explosion or fire.**
4. **WARNING: To avoid possible malfunction of the pump, do not expose the pump to X- rays, gamma rays or ionizing radiation, or to the RF interference or strong electric/magnetic fields emitted (for example) by diathermy equipment or mobile telephones. If the pump is used in the presence of, or in combination with Magnetic Resonance Imaging (MRI) machines it must be protected from the magnetic field emitted by such equipment. Malfunction of the pump can cause incorrect infusion or loss of infusion resulting in patient injury or death.**
5. **WARNING: Operation of the pump outside the temperature limits defined in the specification may result in erroneous operation. Ensure that the temperature is within the specified limits. Failure to do so may result in patient injury or death.**
6. **WARNING: In order to ensure that the intended infusion is performed, data must be entered correctly. Before confirming any displayed data the user should ensure that it is correct. Failure to do so may result in compromised function of the product, patient injury or death.**
7. **WARNING: Failure to follow the Maintenance Procedures described in Chapter 2 of the *Omnifuse Service Manual* may result in compromised function of the product and lead to patient injury or death.**
8. **WARNING: It is essential that clinical staff remain within visual and audible range of the pump so that they can respond promptly to critical alarms. Failure to respond promptly to an alarm may result in patient injury or death.**
9. **WARNING: The user should ensure that the performance offered by the pump is fit for the intended purpose. Failure to do so may result in compromised function of the product, patient injury or death.**
10. **WARNING: When the pump is carrying out an infusion, to ensure that electrical safety is maintained only items of equipment that conform to EN60950 are to be connected to the RS232 connector situated at the base of the pump, otherwise patient safety may be compromised.**
11. **WARNING: While Graseby Medical Limited have taken all reasonable steps to ensure that the pump operates correctly while under remote control, it is the responsibility of the person who designs and implements the controlling device to ensure that the resulting system (pump and controlling device) is fit for its intended purpose. Failure to do so may result in compromised function of the product, patient injury or user injury.**
12. **WARNING: Do not use a faulty pump. If the pump detects a fault, a continuous alarm will sound and the screen will display a System Fault message. If this happens, switch the pump off, disconnect it from the mains and take it to a suitably qualified engineer. Incorrect performance of the pump can cause complications resulting in patient injury or death.**
13. **WARNING: Failure to use the mains lead supplied with the pump will compromise the pump's ability to resist fluid ingress, resulting in possible user or patient injury or death.**
14. **WARNING: Correct management of battery charging is essential to ensure that the pump can operate on batteries for the time specified. Failure to do so may lead to impaired functioning of the pump, resulting in patient injury or death.**
15. **WARNING: The occlusion alarm level must be checked before starting an infusion to ensure that it is appropriate for that infusion. Failure to do so may result in an unacceptably slow time to occlusion alarm, resulting in patient injury or death.**

16. **WARNING: If an occlusion alarm occurs, immediately clamp the line to eliminate the possibility of a bolus being delivered to the patient. Then inspect the fluid pathway for kinks, clogged catheter, etc. in order to remove the occlusion prior to restarting the infusion. An unintentional bolus of medication can result in patient injury or death.**
17. **WARNING: Use only the syringes and administration sets listed in *Specifications and Standards* at the end of this manual. Failure to do so may result in an inaccurate delivery. Graseby Medical does not guarantee performance of the pump if syringes other than those listed are used. Incorrect function or performance of the pump can cause complications resulting in patient injury or death.**
18. **WARNING: The volume of fluid contained in the connecting tubing is a residual amount and will not be infused. Allowance must be made for this extra volume of fluid when initially filling the syringe and purging the system. Under-delivery of medication can cause complications resulting in patient injury or death.**
19. **WARNING: To avoid patient embolism, ensure that the patient tubing is purged of all air bubbles before administering any medication. The pump provides a purge facility to assist with this process. The presence of air within the medication can result in complications leading to patient injury or death.**
20. **WARNING: For safe operation of the pump, the syringe must be correctly loaded. Ensure that the syringe plunger is properly aligned before closing the barrel clamp. Failure to do so may result in inaccurate delivery, resulting in patient injury or death.**
21. **WARNING: Ensure that your fingers are not in the path of the pusher during syringe loading or unloading. Failure to do so may result in user injury.**
22. **WARNING: To avoid syphoning of the syringe contents (free flow), ensure that the syringe is correctly loaded into the pump, that the syringe plunger is properly engaged by the pump's pusher block and that the pump is placed not more than 80cm above the infusion site. Syphoning can result in over-infusion leading to patient injury or death.**
23. **WARNING: To avoid over-infusion, do not purge the infusion line when the administration set is connected to the patient. Over-infusion of medication can result in patient injury or death.**
24. **WARNING: To avoid the pump becoming detached from an IV pole always make sure that the pump is securely fixed to the pole. Always check the security and stability of the assembly with the pump mounted.**
    If no IV pole is used make sure that the pump is completely stable on a horizontal surface. Failure to observe this warning may cause damage to the Omnifuse pump and harm the user or the patient. As a result, the user or patient may suffer direct injury, or the Omnifuse pump may fail to operate correctly, leading to patient injury or death.
25. **WARNING: Following a significant liquid spill onto the pump, it should be wiped dry and inspected by service personnel before being returned to service. Failure to do so may result in compromised functioning of the pump, leading to patient or user injury or death.**
26. **WARNING: To avoid syphoning of the syringe contents (free flow), ensure that the patient line is clamped before loading or unloading the syringe. Syphoning can result in over-infusion leading to patient injury or death.**

Cautions

Cautions tell you about dangerous conditions that may occur and cause damage to the pump if you do not obey all of the instructions in this manual.

1. **CAUTION: Refer all service, repair and calibrations only to qualified technical personnel. Unauthorised modifications to the pump must not be carried out.**
2. **CAUTION: When turning the pump on, if screens similar to those illustrated are not displayed do not use the pump, and send the pump to authorised service personnel.**
3. **CAUTION: Do not attempt to move the pump's pusher by hand. Always use the syringe Load key ⇔ to move the pusher. Failure to observe this caution may cause mechanical damage to the pump.**
4. **CAUTION: Never carry the pump except by the handle. Failure to do so may result in damage to the case, or you may drop the pump and cause it internal damage.**
5. **CAUTION: Do not use cleaning and disinfecting agents other than the approved ones specified here.**
6. **CAUTION: The pump must not be immersed in any liquids or exposed to strong organic solvents. Wipe off spills immediately, and do not allow fluid or residues to remain on the pump. Additionally, the pump is not designed to be autoclaved, steam-sterilised, EtO-sterilised or subjected to temperatures in excess of 45°C (113° F). Failure to observe this caution may cause serious damage to the pump.**
7. **CAUTION: Users should bear in mind that the syringe-ear clamp is for location only and may not be powerful enough to hold the syringe in place against the powerful negative back-pressures that may be encountered in certain clinical applications.**
8. **CAUTION: Failure to use the mains lead retainer means that the pump may be accidentally disconnected from the mains.**

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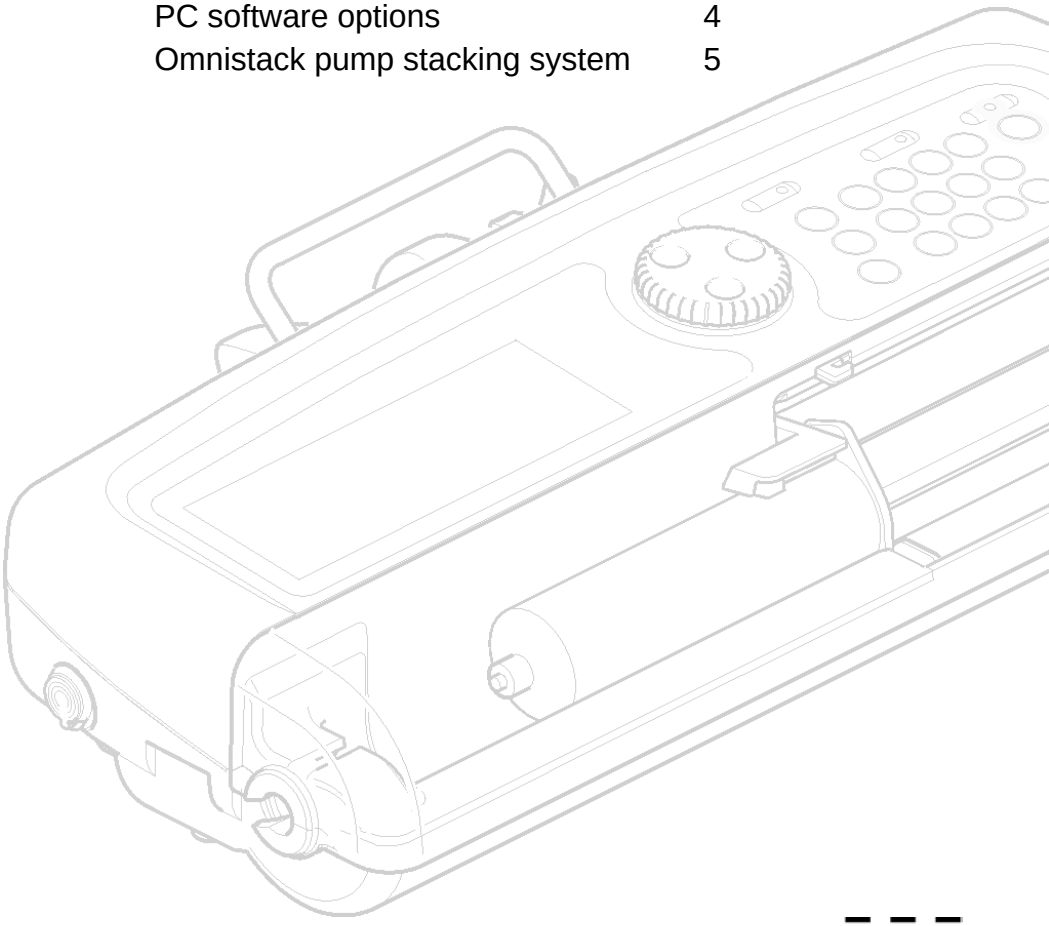

Introduction to the Omnifuse PCA

The Omnifuse PCA pump is designed for Patient Controlled Analgesia and is supplied with a patient handset and lockable cover. It has a purple Command wheel, LCD surround and keypad.

The features on the Omnifuse PCA pump can be tailored to suit individual hospital and clinical requirements. The pump can be programmed for a patient bolus, with or without a loading dose or background infusion. A clinician's override bolus is also available.

The clear messages on the screen guide you through an intuitive programming and running sequence, with further information available from on-screen help explaining how to use a feature or follow a prompt.

The Omnifuse PCA pump can be run directly from the AC mains supply or, when necessary, from its own rechargeable backup batteries.

The pump has been designed to be simple to use, with a minimum of physical controls. Most actions are performed by choosing options from the screen with the Command wheel which you turn and then press. There is a keypad for entry of numerical data, for stopping and starting the pump and for switching it on and off.

Carefully read the entire contents of this manual before using the pump.

Safety and security

Many safety features are incorporated into the Omnifuse PCA pump:

- Self-test routines run each time the pump is switched on to check it is working correctly.
- Continual checks are also made while the pump is running; especially during an infusion.
- A wide range of audible and visual alarms and warnings, including the LCD screen flashing.
- Each infusion setting must be reviewed and confirmed before an infusion can start.
- Occlusion pressure is monitored as a standard feature. The dry-side pressure level is displayed while the pump is running. The occlusion alarm level setting is adjustable but may be locked to restrict the upper level if required.
- A lockable cover and security software controls access to the syringe. The pump can only be programmed if the cover is open and an infusion can only be started when the cover is shut.
- A history of the last 3000 of the pump's events or actions, stamped with the date and time can be viewed on the pump screen, or transferred to a PC to be analysed in more detail.

Performance

Below is a summary of PCA features of the pump and the relevant parameter range:

At the back of this manual is a detailed specification covering all aspects of the pump performance.

Pump feature	Range
Dose Range	0.1 µg (mcg) - 99.9mg
Dose Duration	5 seconds - 99.59 minutes
Clinician Override Dose Range	0.1 µg (mcg) - 99.9 mg
Loading Dose Range	0.1 µg (mcg) - 99.9 mg
Background (Dose) Rate Range	0.1 µg (mcg)/hour - 500 mg/hour
Background Rate Ranges (with bolus)	0.1 - 20 ml/hour
Background Rate Range (no boluses)	0.1 - 800 ml/hour
Bolus Rate Range	0.1 - 800 ml/hour
Bolus Duration Range (timed)	1 second - 99 hours 99 mins
Dose Limit Range by Mass	0.1 µ(mcg) - 99.9 mg
Dose Limit Range by Volume	1 - 999.9 ml
Dose Limit Range by Demands	1 - 999 demands
Dose Limit Period	1 - 8 hours or infusion time

User interface

The screen and controls on the pump are easy to use.

- All the information for programming and running infusions is shown on the LCD screen (Liquid Crystal Display).
- Next to the screen is a multi-function Command wheel which you turn and press to select items and enter information.
- The pump has a numeric keypad for entry of data such as bolus dose.
- An Infusion LED flashes to show that the pump is infusing and changes colour if the syringe nears empty. A yellow LED is lit when the pump is connected to the AC mains supply.
- While you program the pump and during an infusion, the screen shows instructions on a message line. Help and information icons lead to more detailed information.
- Status icons show the battery level and occlusion pressure level.
- A special feature lets you program the pump ready for an infusion, then leave it 'asleep' until it is needed.
- The pump totaliser shows totals for the infusion and totals since last reset. A *shift totals* feature is also available.
-

Administration sets

Graseby medical have a wide range of Flo-Safer™ administration sets that may be used for specific infusion therapies. These are listed in the *Specification* at the end of this manual.

Syringes

On the Omnifuse PCA, the syringe can be loaded as a one-handed operation. Syringes of 2 ml to 60 ml capacity can be used with the pump.

The syringe type and size are confirmed as the first step in programming an infusion. The syringe types available on the pump's menu depend on which have been configured for use.

Bolus

The Omnifuse PCA pump offers a PCA bolus, activated by a press on the patient's handset. The rate and size of the dose and the lockout time between doses depends on the drug protocol or programmed infusion in use on the pump. The pump's maximum PCA bolus rate is 800 ml/h.

In addition to the PCA bolus, the Omnifuse PCA can be configured to offer a Clinician Bolus. You need to use a special password to access this feature which overrides the PCA lockout time. The dose and rate for the clinician bolus shown on the screen are the same as the PCA bolus, but can be altered if necessary before giving the bolus.

The PCA pump can also be programmed to deliver a loading dose when required.

Charts - Pain, nausea and sedation scoring

You can use the Omnifuse PCA to collect patient monitoring scores regarding pain, nausea and sedation. This information can then be viewed as a chart on the screen, or transferred to a PC for viewing.

Protocols

The Protocol feature is an integral part of the Omnifuse PCA. It ensures the safe programming and use of the Omnifuse for a PCA environment.

Before the pump is used, the hospital/ community protocols relevant to the clinical area can be configured in the pump. This is done using the Omnifuse Drug Protocol Management System.

Depending on the clinical area, there may be just one protocol reflecting a specific drug regime, or there may be a choice of protocols.

For example, a protocol can be loaded into the pump so it can be used for the administration of 1 mg of analgesia with a lockout time of 5 minutes. When the pump is switched on for use, this protocol will be available, and all the user in the clinical area needs to do to set up the pump for a patient is to load the syringe, select the protocol and confirm the parameters displayed on the screen.

The Omnifuse PCA can also offer a *User Programmed* option to enable the pain specialist to enter one-off infusion settings suitable for a particular patient.

Mass Units

The Omnifuse PCA can be set up to allow the clinical user to enter a dose of medication expressed as a mass, rather than a volume to be infused over a period of time.

Graphics

The pump can display a graph to show the profile of the infusion, the pain, nausea and sedation scores entered for the patient.

Locking pole clamp

An optional locking pole clamp can be used with the Omnifuse PCA. Once locked onto an IV pole, the pump can only be moved by an authorised person with a key.

Power

The Omnifuse PCA is normally run from the AC mains supply. However, it switches automatically to internal rechargeable batteries in the event of a power cut or if it is disconnected from the mains. On fully charged batteries, the pump may be run for up to 10 hours depending on the infusion rate.

External communications

The pump has an RS232 serial cable connector with PC interface protocol. This is used for configuring the pump from a PC, used to transfer the pump history to a PC and is also used to control the pump externally.

PC software options

With a PC linked to the pump by RS232 cable you can transfer information between the pump and PC. Two software packages are available on CD-ROM from Graseby Medical Ltd. for use with the Omnifuse PCA pump.

Omnifuse Drug Protocol Management System

The Protocol support software package is used to design and create Protocols and download them for use on the Omnifuse PCA.

Graseby Omnifuse Technician PC Software

This software package is required for technical maintenance and servicing an Omnifuse PCA pump, as well as pump configuration.

The Technician PC software is used to:

- Perform service tests and calibration on the pump.
- Set parameters and enable or disable options that would otherwise be changed using the pump's own Configuration menu.
- Download and examine the pump's history database.
- Keep a service database for pumps.
- Store configurations and settings from the pump and restore them later.

Omnistack pump stacking system

The Omnistack is a multi-pump stacking system designed for mounting Omnifuse syringe pumps.

Up to four Omnifuse pumps can be mounted on an Omnistack, powered from a single mains inlet.

The Omnistack can be clamped to the Graseby wheelbase, or to a suitable pylon. The Omnistack must not be used with a standard IV pole.

For full details on how to use the Omnistack, see the *Omnistack Instruction Manual*.

The part numbers for the Omnistack stacking system are listed in the Accessories section of the Specification at the back of this manual.

Note: An Omnifuse PCA pump fitted with the optional Locking Pole Clamp cannot be mounted in an Omnistack stacking system.

Chapter 2
Basics

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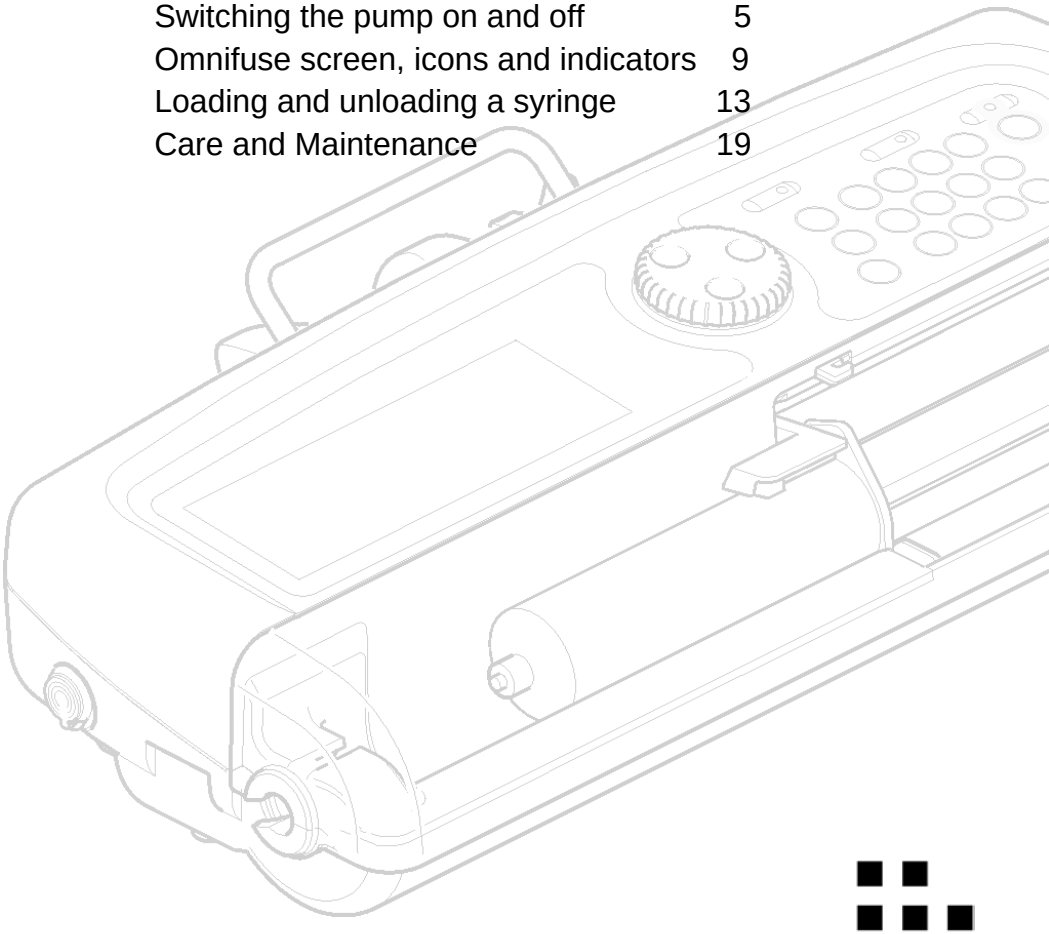
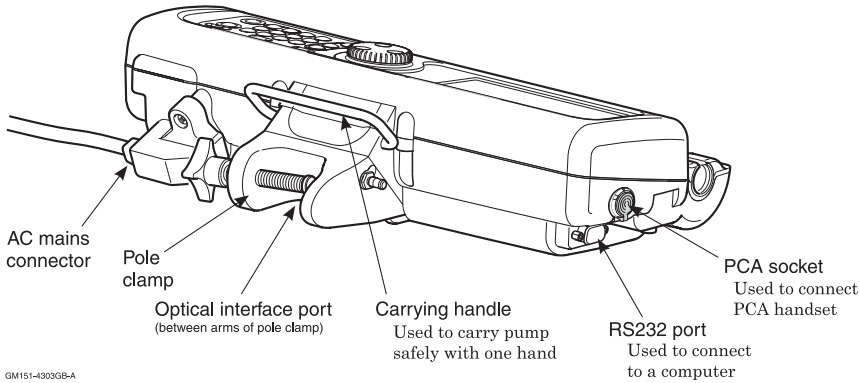


Parts of the Omnifuse PCA pump

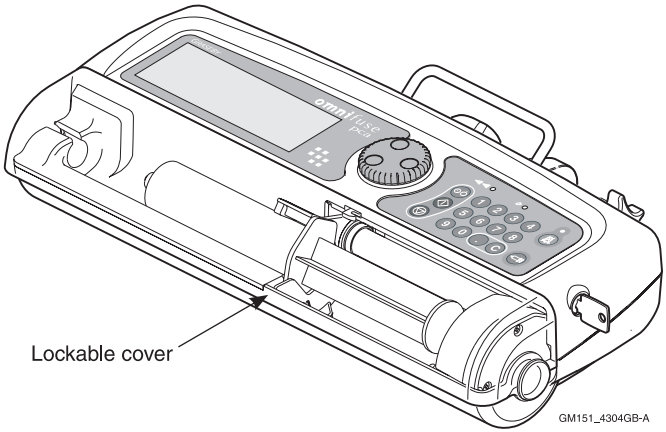
Rear of the pump



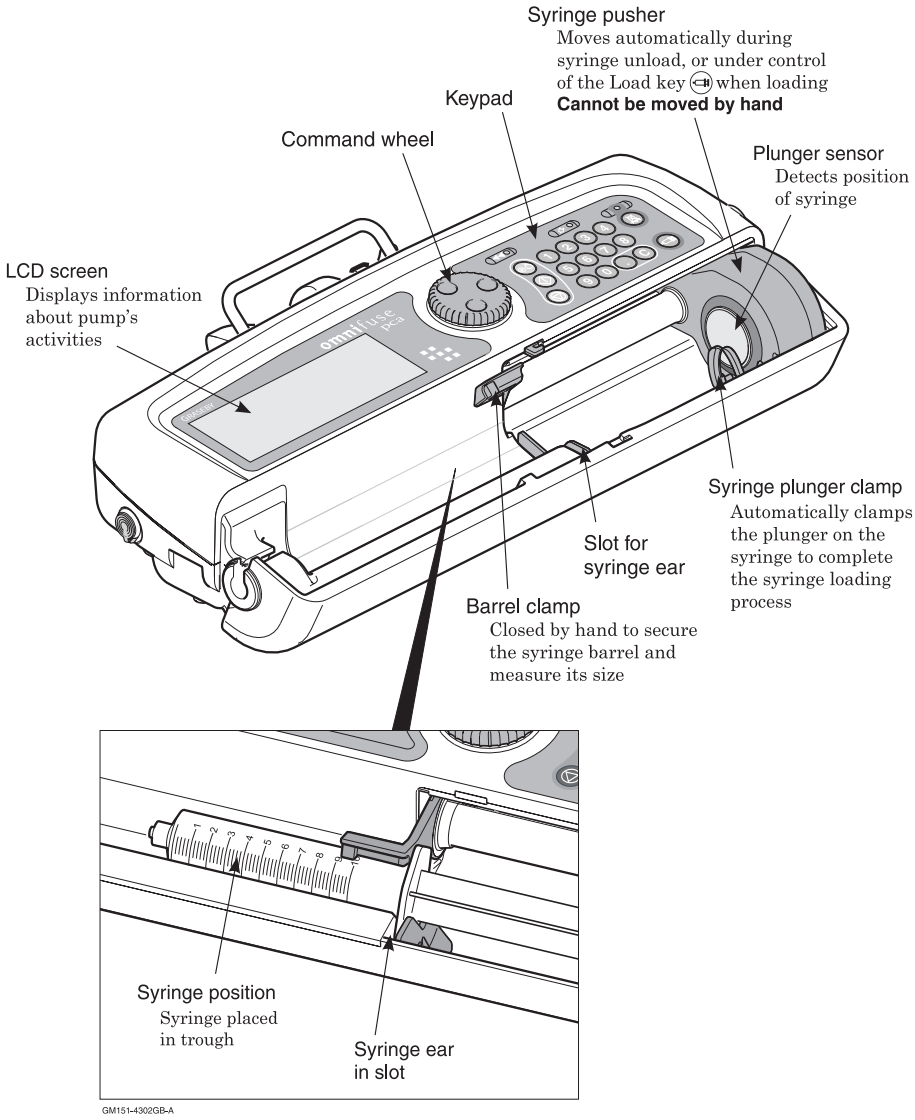
Lockable cover

The PCA pump is fitted with a lockable cover which must be opened, using a key, before you can program a PCA infusion. The cover must be shut and locked with a key before the infusion starts. The cover should only be removed for cleaning, see *Removing and replacing the lockable cover,* page 2 - 22.

If an infusion is started, then suspended, the cover must be unlocked and opened then shut and locked before you can restart the infusion. This is to ensure that the infusion can only be started by an authorised person who has the key to the cover.



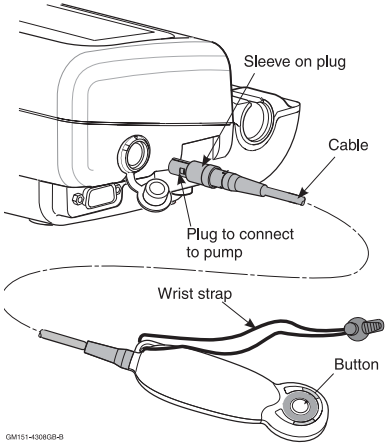
Front of the pump


Syringe pusher
Moves automatically during syringe unload, or under control of the Load key when loading
Cannot be moved by hand
Keypad
Command wheel
Plunger sensor
Detects position of syringe
LCD screen
Displays information about pump's activities
Syringe plunger clamp
Automatically clamps the plunger on the syringe to complete the syringe loading process
Slot for syringe ear
Barrel clamp
Closed by hand to secure the syringe barrel and measure its size
Syringe position
Syringe placed in trough
Syringe ear in slot
GM151-4302GB-A

PCA Handset

The Omnifuse PCA patient handset is designed to be comfortable and easy to use.

The patient presses the button to demand a PCA bolus dose.



Cable and wrist strap

The handset is connected to the pump by a purple cable which matches the pump and can be distinguished from any other cables. The handset is supplied with a wrist strap.

Connection to pump

You can connect the handset before or after switching the pump on.

To connect the handset to the pump:

- Push the plug on the cable firmly into the socket on the left hand side of the pump. Once correctly connected, the handset is locked in the socket.

To remove the handset from the pump:

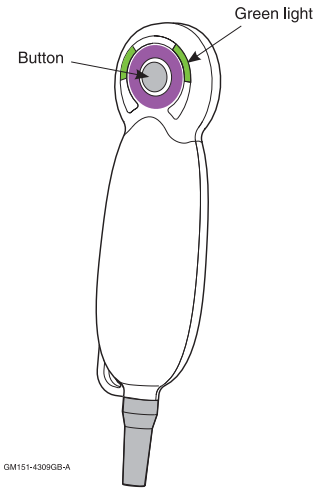
- Grasp the sleeve on the plug. Pull gently to release the lock and disconnect the handset.

Patient demand button and handset light

Around the button used by the patient to demand a PCA dose, the handset has two LEDs that when lit give a green light.

The pump can be set to switch the light on and off in one of three ways:

- The light is *on* when the PCA dose is available, but goes *off* during the bolus and stays *off* during the lockout period
- On all the time, so the handset is easy to locate, even in the dark
- Off all the time.



The Command wheel, keypad and LEDs

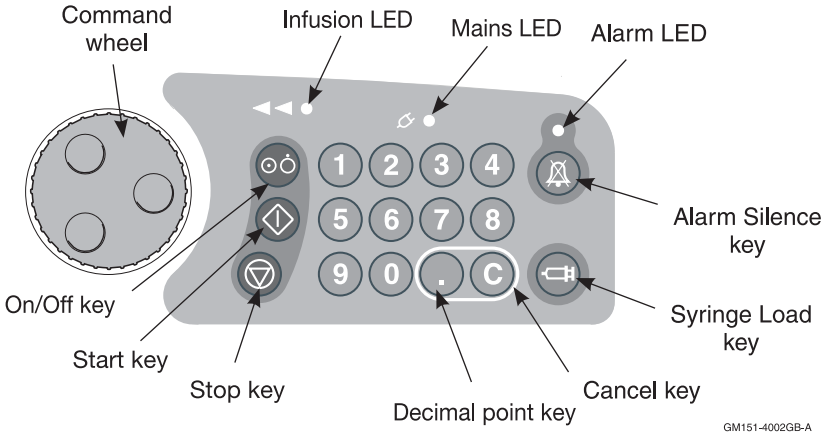
Command wheel

You enter commands into the pump with a multi-function Command wheel.

You can turn the wheel freely, either clockwise or counter-clockwise.

If you press the wheel down, you will feel a positive *click*.

- Turn the wheel in either direction to highlight items on the screen such as hotspots
- Press the wheel to select, accept or confirm the parameters or action.



Keypad

Next to the Command wheel is the keypad where you will find the:

- On/Off key
- Start key (Green)
- Stop key (Red).

The numeric keypad is for entering numbers. It includes a Cancel key and Decimal point key.

On the right of the keypad is:

- Alarm Silence key (Red)
- Syringe Load key (Blue).

LEDs

The pump has three LEDs:

Infusion LED - This is green, or amber. It is lit or flashes when an infusion is running. For full details, see *Pump indicators,* page 2 - 11.

Mains LED - This is yellow. It is lit when the pump is connected to the AC mains supply and goes out if the pump is operating on batteries.

Alarm LED - This flashes red when the pump is sounding the alarm.

Switching the pump on and off

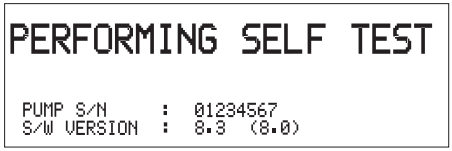
Before you switch the pump on, visually check for damage to any part of the pump or its connectors.

Plug it in to an AC mains supply if possible. If necessary the pump can be run on its internal batteries see *Using the pump on batteries,* page 2 - 7.

Switching on and power-up tests

To switch on, press On/Off ⏻. The initial screen shows:

The pump continues with its self test:

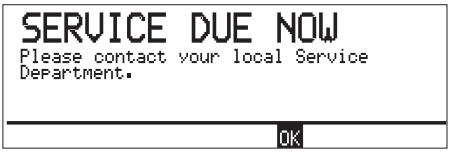


The Pump ID and Location shown on this screen are set up in the Technician menu described in the *Omnifuse PCA Technical User Manual.*

CAUTION: When turning the pump on, if screens similar to those illustrated are not displayed do not use the pump, and send the pump to authorised service personnel.

Service due message

The pump checks its service due date at the end of the power-up tests. If a service is due, you will see a message, for example:



The pump can still be used. To continue with your setup, simply press the Command wheel. If however you wish the pump to be serviced, switch off. The pump will display the service due message when you next switch it on.

Faulty pump

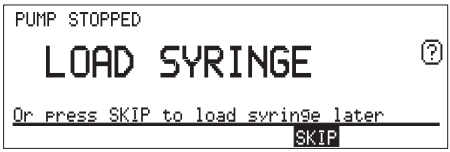
If the pump discovers a fault during the power-up tests, it displays a message. Do not use the pump, but return it to a qualified service engineer. For more details, see *Troubleshooting, Chapter 4.*

WARNING: Do not use a faulty pump. If the pump detects a fault, a continuous alarm will sound and the screen will display a System Fault message. If this happens, switch the pump off, disconnect it from the mains and take it to a suitably qualified engineer. Incorrect performance of the pump can cause complications resulting in patient injury or death.

Power-up tests completed

When the power-up tests are complete, the screen shows the first of the syringe loading instructions.

For example:



The pump is now ready for you to load the syringe, as described on page 2 - 13.

Switching off

Before you can switch off, the pump must be stopped. If an infusion is running:

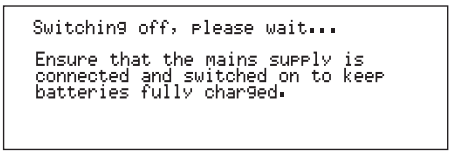
- Press and hold the Stop key.

The screen displays:

To switch off the pump:

- Press the On/Off key and hold it down for two seconds.

As the pump switches off, the screen displays:



Ensure that the pump is connected to the AC mains to keep the batteries charged and ready for use next time.

Using the pump on batteries

In everyday use, the Omnifuse pump should be connected to a suitable AC mains supply, not used on batteries.

This way, the batteries are kept fully charged, available for use in an emergency.

- The yellow Mains LED is only lit when the pump is connected to the AC mains supply
- The battery icon is shown on the screen when the pump is running on batteries
- The battery icon is displayed when the pump is connected to the AC mains supply, to show that the batteries are being charged. When the batteries are charged, the icon disappears.

Pump with patient in transit

If a mains supply is unavailable - for example, if the pump is infusing a patient in transit - you can start or continue an infusion with the pump running on batteries.

Mains lead retainer

The mains lead is held in the pump with a retainer. This is so that it cannot be pulled out accidentally.

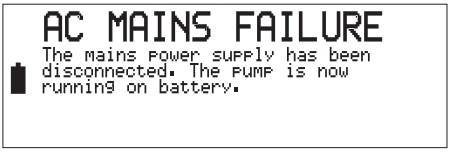
CAUTION: Failure to use the mains lead retainer means that the pump may be accidentally disconnected from the mains.

WARNING: Failure to use the mains lead supplied with the pump will compromise the pump's ability to resist fluid ingress, resulting in possible user or patient injury or death.

Mains supply failure

If the AC mains supply fails or if the pump is disconnected from the mains, it automatically switches to its internal batteries.

If the pump is infusing, the infusion continues without interruption. This message is displayed:



- The yellow Mains LED goes out and the battery icon is shown on the screen when the pump is running on batteries.

The pump will display a warning message approximately 30 minutes before battery power runs out.

When the pump is reconnected to the main supply, or mains power resumes, the pump automatically switches back to the AC mains supply.

Note: When the pump is being used on battery, an independent battery monitor is active. This provides an additional check on the battery condition.

If the pump's alarm sounds but no message is displayed on the screen, the independent battery monitor has detected a problem.

The alarm cannot be silenced and the pump cannot be used. It must be taken to a qualified technician for repair.

Recharging the batteries

While the pump is switched off, you should leave it connected to the AC mains supply so that the batteries are always kept fully charged.

Recharging can take up to 10 hours if the batteries are completely flat.

While the pump is running on the mains supply, the battery icon is displayed to show that the batteries are being charged. The battery icon disappears once the batteries are fully charged.

Battery life

As a rough guide, an Omnifuse pump can operate on battery power for up to 10 hours at a continuous infusion rate of 5 ml/h with the batteries starting from fully charged. This period includes four syringe load/unload cycles.

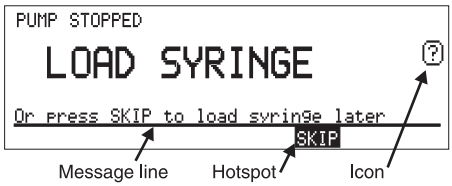
To ensure that the batteries perform as specified they must always be fully charged. The batteries must not be left partially charged for extended periods, for example when the pump is in store.

WARNING: Correct management of battery charging is essential to ensure that the pump can operate on batteries for the time specified. Failure to do so may lead to impaired functioning of the pump, resulting in patient injury or death.

Omnifuse screen, icons and indicators

Moving around the screen

To move around on the screen you turn the Command wheel in either direction. The highlighting shows you where you are.



As well as the main command on the screen, you can see:

- The message line
- Hotspots
- Icons.

Message line

This gives you more details about the command on the screen, or shows the status of the infusion, or shows you a warning or alarm message reminder.

Hotspots

A hotspot is an action word on the bottom line of the screen. The hotspots you can see are relevant to whatever the pump is doing. The most common hotspot is **CONFIRM**.

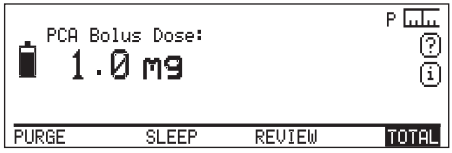
In many cases, the hotspot you need is automatically highlighted on the screen, so you can just press the Command wheel.

If the relevant hotspot is not highlighted, turn the Command wheel to highlight it, then press the Command wheel.

When you press the wheel, the pump will carry out the command. In this example, if you press the Command wheel with **SKIP** highlighted, the pump will skip the syringe load process.

Icons on the pump screen

This example screen shows where the Omnifuse screen icons may appear during an infusion.:



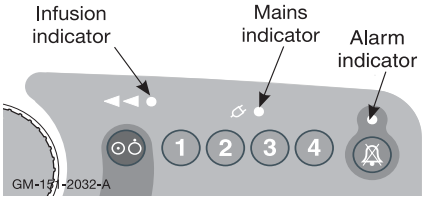
There are additional icons that appear on graph screens. The table on page 2 - 10 explains all the icons that may appear.

Screen icons

Icon	Name	Description
	Info	Displays settings and parameters for the current infusion.
	Help	Displays a screen of help information relating to the current state of the pump.
	Occlusion Level	The position of the vertical line shows the level at which the occlusion alarm pressure has been set, from Level 1 on the left to Level 5 on the right. When the pump is running the icon fills from left to right to show the current pressure. You use this icon to change the alarm pressure level see *How to set or change the occlusion alarm level,* page 3 - 12.
	Battery level	This is displayed as a static icon when the pump is running on batteries, or as a flashing icon when the pump is connected to the AC mains supply and the batteries are charging.
	Hold (Graph)	This appears when the pump is displaying the Graph screen. Select this icon to hold the screen. While the screen is on hold, the icon changes to the return icon shown below.
	Return (Graph)	This is displayed when the pump is holding the Graph screen. Select this icon to return to the running screen, or previous graph screen.
	Zoom (Graph)	This is displayed during long infusions, when the graph display can be zoomed to show more detail for a particular hour.

Pump indicators

There are three LEDs or indicators on the front of the pump, positioned above the numeric keypad.



Infusion indicator

The Infusion indicator shows whether or not the pump is infusing, and changes colour when the syringe is nearly empty. See details in the table below.

Infusion LED	Shows ...
Flashing	Medication being delivered.
Slow flashing	Pump on Standby after delivering a dose.
Steady	Infusion suspended - Stop key ⓘ was pressed.
LED Colour	**Shows ...**
Green	Syringe is full.
Amber	Syringe is nearly empty.

Mains indicator

The yellow Mains indicator is lit when the pump is connected to the AC mains supply.

Alarm indicator

The red Alarm indicator flashes when the pump sounds the alarm.

Sounds on the Omnifuse

This table describes the sounds that you may hear from the Omnifuse pump and tells you what action is required if you hear them:

For more details on pump warnings and alarms, see *Troubleshooting, Chapter 4.*

Sound	Occurs when...	What you should do
Beep	You press a key or the Command wheel.	If the beep is too soft or too loud, call a technician to change it for you via the Key Beep Volume parameter in the Configuration menu.
Double beep	The pump requires your attention.	Read the message on the screen, then carry out the suggested action.
Alarm	The pump has discovered an operating problem, for example the syringe is empty or there is an occlusion.	Read the message on the screen, then press the Alarm Silence key (🔕) and carry out the suggested action.
Continuous System Alarm	The pump has detected an internal error.	Read the message on the screen. Pressing Alarm Silence (🔕) will have no effect. Switch off the pump and hand it over to a qualified technician for servicing.

Setting the alarm volume

The volume of the alarm on the Omnifuse can be set to one of three levels:

- 1 - Soft
- 2 - Medium
- 3 - Loud.

Provided the pump is not infusing and the cover is open, you can adjust the volume to suit the operating environment.

To adjust the alarm volume:

- Press and hold the Alarm Silence (🔕) key and at the same time press the 1, 2 or 3 key on the keypad.

As you press a number, the pump demonstrates the volume of the alarm at your chosen level.

The last number you press sets the volume that the pump will use for the alarm, until set to a different volume.

Loading and unloading a syringe

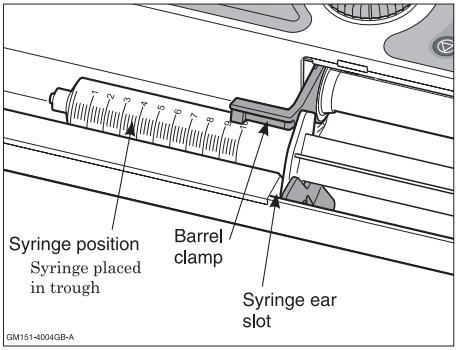
The pump is designed to make loading a syringe a one-handed operation. There are three components that secure the syringe:

- The syringe ear slot
- The barrel clamp
- The pusher.

The syringe is placed in the trough at the front of the pump. The ear or flange of the syringe should be placed into the syringe ear slot. The barrel clamp is lowered by hand onto the syringe.

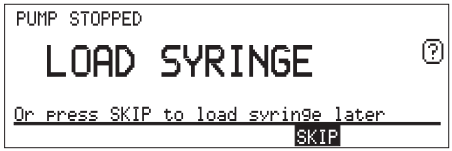
The sections on the following pages provide full details on loading/unloading a syringe.

Please note that Warnings relating to syringe loading and unloading are listed on page 2 - 15.



When to load the syringe

When you turn the pump on, you see the screen below, unless a syringe is already loaded:



If a syringe is already loaded you will only be asked to confirm the brand and size.

When to skip loading

If the syringe is not yet ready, or if someone else is preparing the syringe while you program the pump, you can skip loading. The **SKIP** hotspot allows you to go ahead with programming the pump and load the syringe later on.

Please read *Warnings and Cautions concerning syringes*, on page 2 - 15.

Syringe brand and size

When you load a syringe into the trough and close the barrel clamp the pump displays:

- The name of the previously loaded syringe brand, and
- The size of the syringe it currently detects.

For example:

The pump can sense the *size* of syringe you have loaded, but it cannot sense the *brand*.

Instead it remembers the brand of syringe used last time, then checks the sizes listed for that brand against the size of the syringe sensed.

If the pump finds that the size is not compatible with the brand, it displays a warning on the message line: **Brand does not match detected size**. If you see this message you must select the correct brand. Syringes supported by the Omnifuse are listed in the Specification at the back of the manual.

It is essential that you check the syringe brand displayed by the pump and make sure that it corresponds to the one you have loaded.

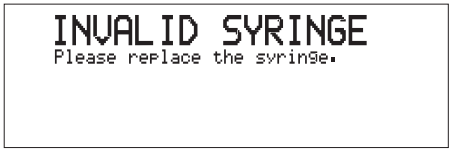
Replacing a syringe during an infusion

During an infusion you can change syringes. For example you could change an empty syringe with a full one.

The replacement syringe must be the same brand and size as the original syringe brand and size that were confirmed at the start of the infusion.

Suspend the infusion by pressing Stop ⊜, then carry out the instructions for *How to unload a syringe,* page 2 - 17, and *How to load a syringe,* page 2 - 16.

If you try to replace a syringe with a different brand or size, you will see an invalid syringe message:



You will not be able to restart the infusion until you load a syringe of the same brand and size as the original.

Please read *Warnings and Cautions concerning syringes*, on page 2 - 15.

Warnings and Cautions concerning syringes

Please read these warnings and cautions before following the instructions in any of these sections:

- *How to load a syringe,* page 2 - 16
- *How to unload a syringe,* page 2 - 17
- *How to change the brand of syringe,* page 2 - 18.

WARNING: Use only the syringes and administration sets listed in Specifications and Standards at the end of this manual. Failure to do so may result in an inaccurate delivery. Graseby Medical does not guarantee performance of the pump if syringes other than those listed are used. Incorrect function or performance of the pump can cause complications resulting in patient injury or death.

WARNING: To avoid syphoning of the syringe contents (free flow), ensure that the syringe is correctly loaded into the pump, that the syringe plunger is properly engaged by the pump's pusher block and that the pump is placed not more than 80cm above the infusion site. Syphoning can result in over-infusion leading to patient injury or death.

WARNING: For safe operation of the pump, the syringe must be correctly loaded. Ensure that the syringe plunger is properly aligned before closing the barrel clamp. Failure to do so may result in inaccurate delivery, resulting in patient injury or death.

CAUTION: Do not attempt to move the pump's pusher by hand. Always use the syringe Load key to move the pusher. Failure to observe this caution may cause mechanical damage to the pump.

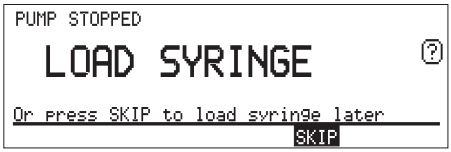
WARNING: The supported syringes are single use only and the administration set should be changed according to the manufacturers instructions. A new syringe and administration set must be used for a new patient. Failure to observe this warning may lead to compromised performance of the pump, resulting in patient injury or death.

WARNING: To avoid over- or under-infusion, always verify that the brand and size of the loaded syringe are the same as the brand and size displayed on the screen before starting an infusion. Failure to do so may result in an inaccurate delivery of medication, resulting in patient injury or death.

WARNING: To avoid syphoning of the syringe contents (free flow), ensure that the patient line is clamped before loading or unloading the syringe. Syphoning can result in over-infusion leading to patient injury or death.

WARNING: Ensure that your fingers are not in the path of the pusher during syringe loading or unloading. Failure to do so may result in user injury.

How to load a syringe



1. Ensure that the line to the patient is clamped, or disconnected. Switch on the pump if it is switched off. Lift up the barrel clamp if it is closed - you will see this message.

2. Place the syringe in the trough. The syringe ear must fit into the slot.

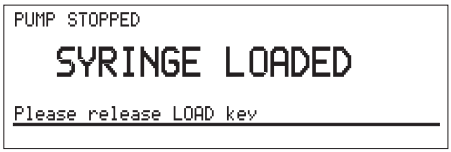
3. Lower the barrel clamp by hand.

   The screen shows the size of syringe the pump has detected and the brand of syringe used last time.

4. Press the Command wheel to **CONFIRM** that the syringe brand and size are correct. To change brand, see *How to change the brand of syringe,* page 2 - 18.

5. Press and hold the blue Load key ⇥.

6. Keep positive pressure on the Load key ⇥ while the screen shows this message.



7. Release the Load key ⇥ when the the pump beeps and displays this message. The pump will display the next screen in the programming sequence.

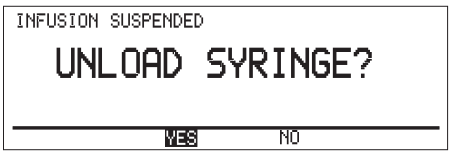
Please read *Warnings and Cautions concerning syringes*, on page 2 - 15.

How to unload a syringe

If the pump is switched off with a syringe still in place, you do not need to turn it on: lift the barrel clamp and gently remove the syringe from the trough.

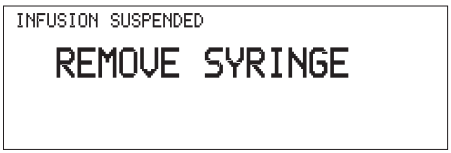
If the pump is switched on, the infusion must be suspended, or the pump must be stopped before you try to unload a syringe.

1. Press Stop ⓞ. If you press the key briefly, the screen displays: **SUSPENDED**
   or if you press and hold Stop ⓞ: **PUMP STOPPED**.
2. If infusate is still present in the syringe, clamp the patient line before proceeding.
3. Unlock and open the cover.



4. Lift up the barrel clamp by hand.

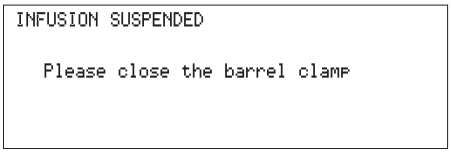
   The pump recognises that you have lifted the clamp and asks you to confirm that you wish to remove the syringe.
5. Confirm **YES** by pressing the Command wheel.



   The pusher will automatically release the syringe plunger and retract.
6. When you see this message, remove the syringe from the trough.

To discontinue unloading:

If you did not intend to unload the syringe:



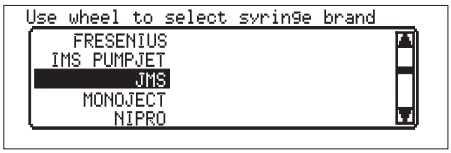
1. At Step 5 above, turn the Command wheel to select **NO**. The pump asks you to close the barrel clamp.
2. Close the barrel clamp, close and relock the cover. Press Start ⓘ to resume the infusion.

Please read *Warnings and Cautions concerning syringes*, on page 2 - 15.

How to change the brand of syringe

If the syringe brand and size displayed are not correct when you load the syringe, follow the steps shown here:

1. Turn the Command wheel to highlight the syringe brand, then press the Command wheel to change the selection.

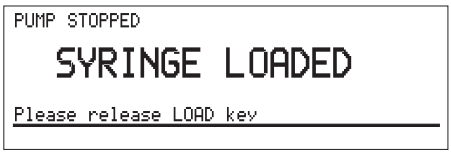


2. The screen shows a menu of syringe brands. Turn the wheel to highlight the correct brand, then press the Command wheel to select it.

3. When the syringe brand and size are correct, press the Command wheel to **CONFIRM.**

4. Press and hold the blue Load key ⇥.

5. Keep positive pressure on the key while the screen shows this message. When the pusher is properly engaged with the syringe plunger, the pump beeps.



6. When the pump displays this message, release the Load key ⇥. The pump will display the next screen in the programming sequence.

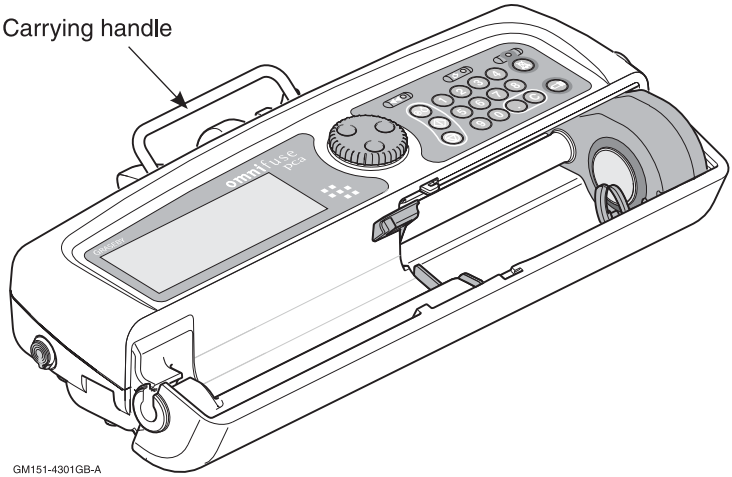
Please read *Warnings and Cautions concerning syringes*, on page 2 - 15.

Care and Maintenance

This section explains the everyday care of the Omnifuse pump. It does not cover technical pump maintenance, which is described in the *Omnifuse PCA Technical User Manual*, and the *Omnifuse Service Manual*.

Carrying the pump

The Omnifuse pump has a carrying handle, which you should always use to carry the pump safely.



CAUTION: Never carry the pump except by the handle. Failure to do so may result in damage to the case, or you may drop the pump and cause it internal damage.

Positioning the pump for use

When you position the pump in a location suitable for the patient, make sure it is:

- Clamped to an IV Infusion pole

  or

- On a stable horizontal surface such as a table where it cannot slide or slip. The surface should be at least 500mm x 250mm to accommodate the pump

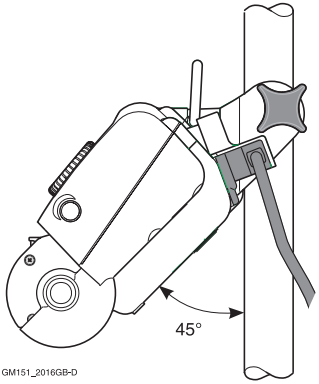
  or

- Fitted into an Omnistack pump stacking system, which can hold up to four Omnifuse pumps. The Omnistack must be used with the Graseby wheelbase, or a suitable pylon. See the *Omnistack Instruction Manual* for full details.

If the pump is fitted with a locking pole clamp, this must be used to secure it to an IV pole.

Using the pole clamp

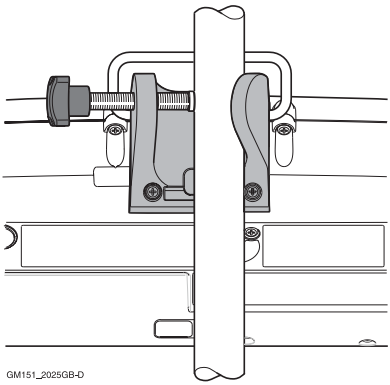
The Omnifuse pump is fitted with a pole clamp designed to hold the pump at a 45° angle against an IV infusion pole.



This angle makes it easy for you to read the screen and also gives you good access to the keypad and Command wheel. To clamp the pump to an IV pole:

1. Close and lock the cover. Open the clamp screw so that the clamp is open wide enough to slip onto the pole.
2. Hold the pump with both hands and position it with the pole between the jaws of the clamp.
3. Supporting the pump underneath with one hand, tighten the clamp screw with the other hand until the pump is securely fixed to the pole.

The rear of the pump looks like this with the pole clamp correctly fixed to a pole.



Locking pole clamp

The pump may be fitted with a locking pole clamp with its own key. If so, it must be used to secure the pump to an IV pole.

Note: The Omnifuse PCA with locking pole clamp must be clamped to an IV stand. It cannot be used on a flat surface, or in an Omnistack.

Once the pump is locked in place on a pole, it can only be moved by an authorised person who has the pole clamp key.

WARNING: To avoid the pump becoming detached from an IV pole always make sure that the pump is securely fixed to the pole. Always check the security and stability of the assembly with the pump mounted. If no IV pole is used make sure that the pump is completely stable on a horizontal surface. Failure to observe this warning may cause damage to the Omnifuse pump and harm the operator or the patient. As a result, the operator or patient may suffer direct injury, or the Omnifuse pump may fail to operate correctly, leading to patient injury or death.

Cleaning and care of the pump

Cleaning the pump

The Omnifuse pump is designed to be water-resistant against accidental spillages, but not waterproof. You should therefore clean the casing and outer surfaces of the pump using a damp cloth, or if necessary a cloth dampened with a mild solution of washing-up liquid.

Clean the pump as follows:

1. Remove the lockable cover as described on page 2 - 22 and clean the cover.
2. Wipe over the exterior surfaces of the pump, paying particular attention to the barrel clamp and the syringe ear slot. To clean beneath the syringe pusher block, switch on the pump and load an empty syringe so that the block moves left.
3. When cleaning is complete, disinfect the pump using a suitable disinfectant solution and remove any disinfectant residue by wiping with a clean damp cloth.
4. After cleaning and disinfection, remove the syringe and replace the lockable cover.

Disinfectants

Disinfect the casing of the pump either with a cloth dampened in a solution of sodium hypochlorite (0.2%), or with alcohol wipes intended for disinfecting equipment.

A suitable disinfectant solution can be made by diluting sodium hypochlorite with water to give a solution of 0.1% available chlorine. Preferably use a freshly made solution, and do not use one which is more than 24 hours old.

Maintenance

Other than cleaning and disinfection, the Omnifuse pump requires no maintenance to be carried out at ward-level. In particular it does not require lubrication - and indeed any lubricant containing an organic solvent may damage the plastic of the pump casing. If you consider that the pump needs further attention after you have cleaned and disinfected it, return it to a qualified engineer for servicing.

WARNING: Following a significant liquid spill onto the pump, it should be wiped dry and inspected by service personnel before being returned to service. Failure to do so may result in compromised functioning of the pump, leading to patient or user injury or death.

CAUTION: Do not use cleaning and disinfecting agents other than the approved ones specified here.

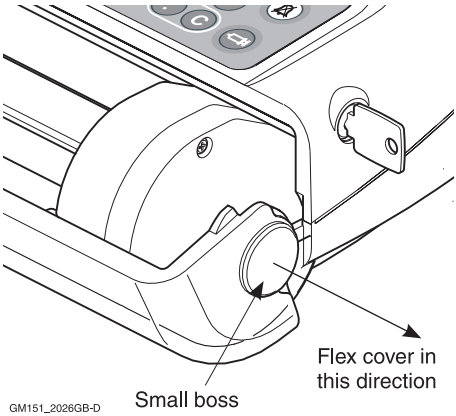
CAUTION: The pump must not be immersed in any liquids or exposed to strong organic solvents. Wipe off spills immediately, and do not allow fluid or residues to remain on the pump. Additionally, the pump is not designed to be autoclaved, steam-sterilised, EtO-sterilised or subjected to temperatures in excess of 45° C (113° F). Failure to observe this caution may cause serious damage to the pump.

Removing and replacing the lockable cover

You should only remove the lockable cover from the pump for cleaning.

To remove the lockable cover:

1. Unlock the cover and open it fully.
2. Load a syringe so that the pusher block is out of the way.
3. Pull the cover at the right-hand side until it flexes sufficiently to allow it to slide over the small boss on the end of the pump case.



   Initially you may find that you need to exert some force.
4. When the cover is free of the boss, pull it towards you then move it to the left to release it from the other end of the case.

To replace the lockable cover after cleaning:

1. Locate the left-hand end of the cover in the hole in the left-hand end of the pump case, where the infusion line leaves the syringe trough.
2. Pull the right-hand end of the cover and flex it until it can slide over the small boss on the right hand end of the pump case.

Chapter 3
PCA Programming

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Using the Omnifuse Sleep mode	13
Giving a clinician override bolus	15
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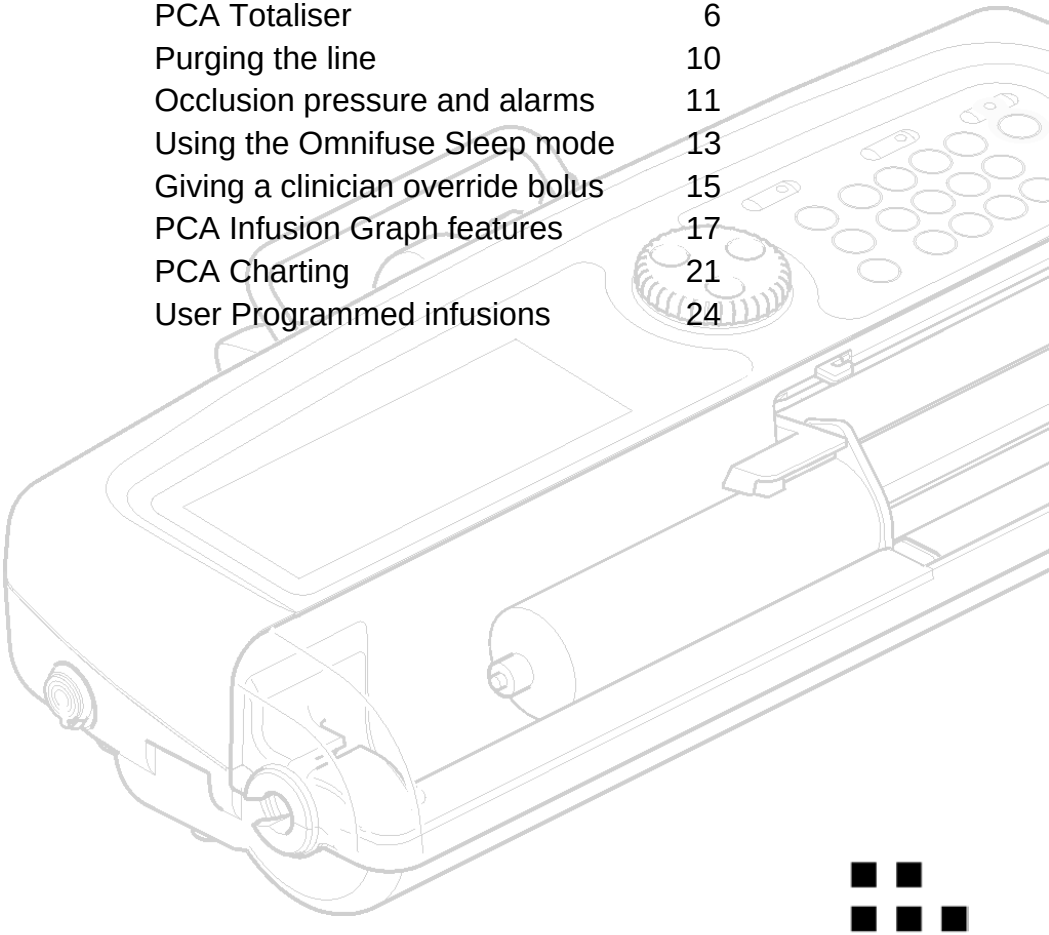


Programming the Omnifuse PCA

The Omnifuse PCA pump is supplied with Protocol software, so in the clinical environment you can choose to deliver analgesia according to a pre-defined protocol.

If no pre-defined protocols are in use, the pump displays the programming steps instead.

Programming with protocols

Protocols are usually designed to deliver a prescription for a named drug, although there may be more than one protocol designed for a drug that is used in more than one way. Up to fifty named protocols can be stored in the Omnifuse.

Before the pump is used in the clinical area, it is set up with specific protocols. The available protocols are displayed on a Protocol menu once the syringe has been loaded.

For details, see *Selecting a PCA protocol,* page 3 - 4.

USER PROGRAMMED

The protocol menu may include an extra **USER PROGRAMMED** option which you can use to set up a PCA infusion, by entering all the parameters. You cannot use this facility to store a protocol.

For details on how to use the **USER PROGRAMMED** option for a User Programmed one-off infusion, see page 3 - 24.

For details on how to create a protocol which appears on the Protocol menu for use in a clinical area, see the *Omnifuse PCA Technical User Manual.*

Programming without protocols

If no protocols are in use, the pump does not display a protocol menu, but shows the first programming step once the syringe is loaded.

The programming steps are the same as those described in the section on the **USER PROGRAMMED** option. For details see *User Programmed infusions,* page 3 - 24

Overview of how the pump works with a protocol

Because a protocol is always devised for a specific clinical application, the Omnifuse PCA is not supplied with any pre-defined protocols by Graseby Medical Ltd. This section explains the general principles of using protocols.

Switch on and load syringe

When you switch on a pump with protocols in use, it carries out its self-tests and then asks you to complete the syringe loading sequence.

When loading the syringe, ensure that the line from the syringe leaves the pump through the channel, so it will not be trapped when you shut the cover.

Select a protocol

The menu of protocols is displayed once you have loaded the syringe. The menu will contain only the protocols that have been set up for this pump. There may be just one, or up to fifty protocols.

Enter the required parameters

When you select a protocol, the pump displays either the review screen, or the first parameter if the protocol requires one.

Many of the parameters for an infusion will be set up as part of the protocol. The pump removes the majority of programming steps and only asks you to enter the minimum information it requires.

Review all the infusion parameters

When you have entered any parameters required by the protocol, or if there are no parameters required, the pump will display the Review screen.

This shows all the infusion parameters for you to check: those you have entered and also the ones that are part of the protocol.

You may be able to change some of these values, depending on how the protocol has been designed.

Parameters can be:

- Fixed, so you cannot make changes
- Limited, so you can make changes within a certain range specified in the protocol, or
- Fully changeable so you can alter them within the pump limits.

The parameters must be confirmed before you can start the infusion.

Start the infusion

Close and lock the cover before starting the infusion. When you press Start ⓘ, the infusion begins and the pump displays the name of the protocol on the screen.

The pump operates according to your confirmed protocol. It may:

- Go **ON STANDBY**, waiting for a PCA demand from the patient
- Begin to deliver the programmed Loading Dose, or
- Start the programmed Background infusion.

PCA infusion features

The Omnifuse PCA pump has features which you may use before an infusion:

Patient totals

You can reset the cumulative totals for a patient before or during an infusion, see page 3 - 6.

Purge line

Using the Purge feature on an Omnifuse PCA pump ensures that the start-up time is reduced to the shortest possible time. This is described on page 3 - 10.

Occlusion alarm setting

Before starting the infusion, you should check that the occlusion alarm level is suitable for the patient, see page 3 - 12.

Sleep mode

Once you have programmed the pump, you can use the Sleep feature to leave the pump switched on and ready to be started when necessary. For details, see page 3 - 13.

The Omnifuse PCA pump has features which you may use during an infusion:

Lockable cover

During the infusion, the cover must be kept locked shut. If the cover is opened when the pump is running, the alarm will sound.

If you need to open the cover when the pump is infusing, first suspend the infusion with the Stop key ⓞ.

Once you have suspended the infusion for any reason, you must open and shut the lockable cover before you can restart the pump.

PCA Bolus, patient's handset

To administer a PCA bolus, the patient presses the button on the handset.

Clinician bolus

The pump can offer a Clinician bolus facility which is accessed using a password. This can be used to override the lock-out period and give a specified dose before the next PCA (Patient) bolus is available. For details on how to give a Clinician bolus, see page 3 - 15.

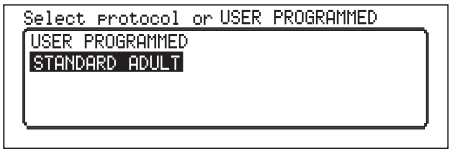
Charting and Graphs

During an infusion, details of the patient's pain, nausea and sedation scores can be collected and stored on the pump. The information can then be viewed as a graph on the screen.

- For details on how to record the patient's scores, see page 3 - 21.
- For details on how to view the patient's pain, nausea and sedation data on a graph, see page 3 - 23.

Selecting a PCA protocol

The protocols available on the pump have been set up for the clinical environment, so you can choose one that is suitable for your patient.



Note: This menu is only shown on pumps that have been set up with protocols.

You do not see this screen on pumps that have been set up without protocols, see *Programming without protocols,* page 3 - 1.

The screen here shows an *example* of how a previously named protocol may used.

1. Switch on the pump and load the syringe, see *Basics, Chapter 2*.

   As soon as the syringe is loaded, the pump shows a menu of one or more protocols.

2. Turn the Command wheel to highlight the protocol you want to use, then press the Command wheel.

   The pump displays the first screen in the programming sequence for the protocol.

On the following pages, you can see an example of what happens if you choose a fixed protocol.

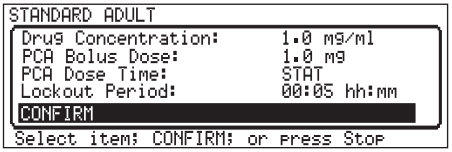
If the menu includes the **USER PROGRAMMED** option as shown on the example screen here, you can create a PCA infusion for a particular patient, see page 3 - 24.

Reviewing settings and starting the infusion

Most protocols will lead directly to the Review screen.

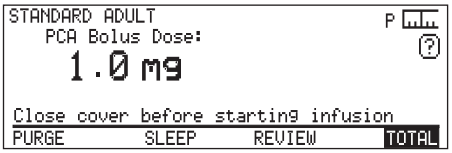
In this example, a fixed protocol has been set up for a clinical environment where the pump will be used to administer a **STANDARD ADULT** PCA prescription for Morphine.

The drug is supplied in a concentration of 1 mg/ml of infusate and the PCA Bolus dose is 1 mg. The lockout time between doses is 5 minutes.

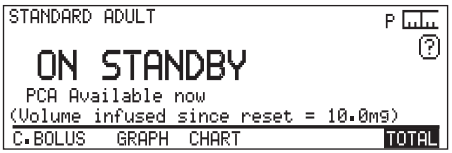


1. The pump displays the Review screen for the protocol, so you can check that the settings are correct for the patient.

2. To continue, highlight **CONFIRM** and press the Command wheel.



3. The Infusion Start screen is displayed showing the PCA Bolus Dose, but before starting the infusion, you could now:
   - Select **TOTAL**, to check or reset the cumulative total, see page 3 - 6.
   - Select **PURGE**, to Purge the line as described on page 3 - 10.
   - Select the pressure icon: to change the Occlusion Alarm level, see page 3 - 12.
   - Select **SLEEP**, to leave the pump Asleep until you want to use it, see page 3 - 13.
   - Select **REVIEW** to go back to the Review screen.



4. To start the infusion, close and lock the cover then press Start.

   The screen displays **ON STANDBY**, ready for the patient to press the handset to deliver a bolus.

PCA Totaliser

The Omnifuse PCA pump has a Totaliser feature. This shows three separate types of total:

- Cumulative total
- Hourly total
- Shift total.

The totaliser also shows the number of good and bad demands made since the last reset.

Note: Cumulative and Hourly totals are always available. Shift totals are shown in the example screens here, but may not be in use on your pump.

How to view and reset the cumulative total

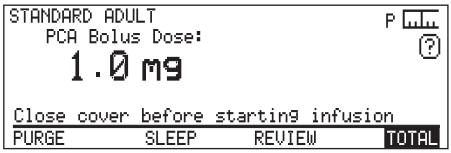
The cumulative total is displayed on the message line when the pump is running and can be viewed or reset from the **TOTAL** hotspot.

To view the cumulative total at any time, highlight the **TOTAL** hotspot and press the Command wheel.

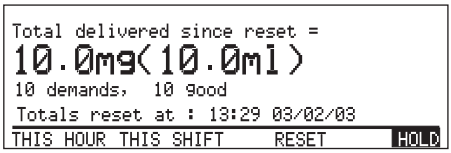
You can reset the cumulative total:

- Before you start the infusion, for example if the programmed infusion is for a new patient, as described in the steps below.
- After the infusion has started. In this case, you must suspend the infusion, and unlock and open the cover before following the steps below. Close and lock the cover before you restart the infusion.

This example shows how to reset the totals if the pump is not infusing, or if the infusion is suspended.

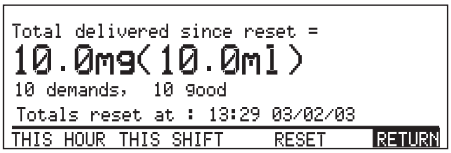


1. On the Infusion Start screen, highlight the **TOTAL** hotspot, then press the Command wheel.

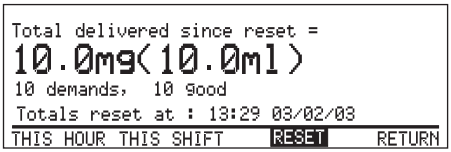


The Total delivered since the last reset is displayed. The totals will be displayed on the screen for five seconds.

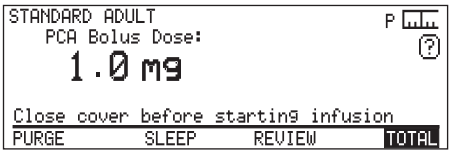
To view the total for longer, highlight the **HOLD** hotspot and press the Command wheel.


Total delivered since reset =
10.0mg(10.0ml)
10 demands, 10 Good
Totals reset at : 13:29 03/02/03
THIS HOUR THIS SHIFT RESET RETURN

2. On the total screen, you can see:
   - Cumulative total volume and mass
   - Number of good and bad demands since the last manual reset
   - Time and date of the last reset
   - Hotspots leading to the other types of total: **THIS HOUR** and **THIS SHIFT,** see page 3 - 8.


Total delivered since reset =
10.0mg(10.0ml)
10 demands, 10 Good
Totals reset at : 13:29 03/02/03
THIS HOUR THIS SHIFT RESET RETURN

3. To reset the total, highlight **RESET** then press the Command wheel.

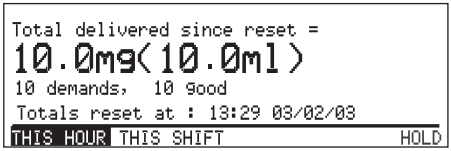


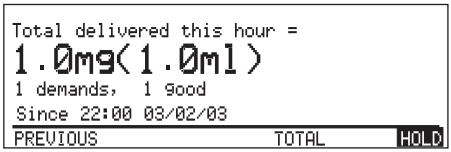
Wait for a moment to return to the Infusion Start screen.

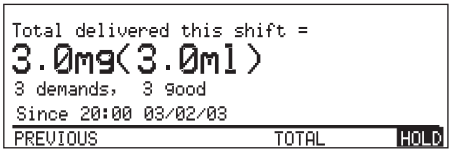
Hourly total and Shift total

Hourly totals and Shift totals work in a similar way. The shifts must be defined and programmed into the pump for a specific clinical environment and may be switched off or changed with the Configuration menu, or Graseby Medical Technician's PC software, see the *Omnifuse PCA Technical User Manual.*

The Hourly and Shift totals are reset automatically at the start of each infusion.







They are accessed from the **THIS HOUR** and **THIS SHIFT** hotspots on the Cumulative Total screen.

Note: The Hourly totals are always available, but Shift Totals can be turned off on a pump. In this case, the **SHIFT TOTAL** hotspot does not appear on the Cumulative total screen. See the *Omnifuse PCA Technical User Manual.*

1. On the Cumulative total screen, turn the Command wheel to highlight **THIS HOUR** or **THIS SHIFT**, then press the Command wheel.

   THIS HOUR displays a screen showing the total infused in the current hour.

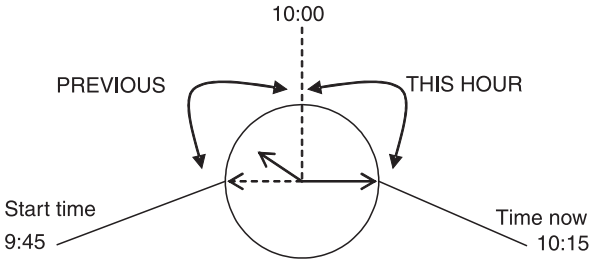
   THIS SHIFT shows the total delivered since the start of this shift.

   For longer infusions, you will see a **PREVIOUS** hotspot. You can add together **THIS HOUR** or **THIS SHIFT** and **PREVIOUS** figures to find out the total volume infused since the start of the infusion, see next page.

2. To return to the Cumulative total screen, highlight **TOTAL** and press the Command wheel. To go back to the **ON STANDBY** or running screen leave the keypad untouched for a few moments.

Understanding the hourly total

To understand **THIS HOUR** and **PREVIOUS** totals, look at this diagram:



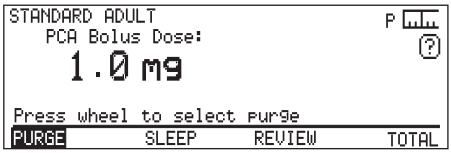
If you pressed Start at 9:45 to commence an infusion, and checked the totals at 10:15:

- **THIS HOUR** would show you the amount delivered since 10:00. The **PREVIOUS** hotspot would appear on the screen.
- **PREVIOUS** would show the volume if used between 9:45 and 10:00.
- **TOTAL** would return you to the cumulative total screen.

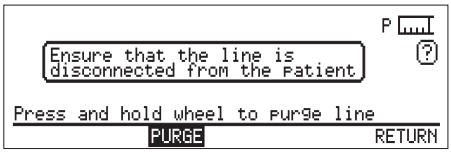
Purging the line

The purging of the line may have been completed before loading the syringe. However, purging with the **PURGE** facility on the Omnifuse pump ensures that the start-up time is reduced to the shortest possible time.

The purge rate is set by a technician, in the range 50-800 ml/h. Details of how to do this are in the *Omnifuse PCA Technical User Manual.*

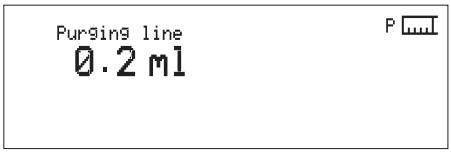


1. Highlight the **PURGE** hotspot and press the Command wheel.



2. The pump displays a warning to ensure that the line is *not* connected to the patient. The **PURGE** hotspot is highlighted.

   Press and hold the Command wheel to purge the line.



3. As the pump purges, the volume that has been purged through the line will be displayed. You may release the Command wheel at any time and the purge will stop. The pump automatically stops purging when it reaches 2 ml on the screen.

WARNING: To avoid over-infusion, do not purge the infusion line when the administration set is connected to the patient. Over-infusion of medication can result in patient injury or death.

WARNING: The volume of fluid contained in the connecting tubing is a residual amount and will not be infused. Hence this extra volume of fluid must be allowed for when initially filling the syringe and purging the system. Under-delivery of medication can cause complications resulting in patient injury or death.

WARNING: To avoid patient embolism, ensure that the patient tubing is purged of all air bubbles before administering any medication. The pump provides a purge facility to assist with this process. The presence of air within the medication can result in complications leading to patient injury or death.

Occlusion pressure and alarms

Infusion pressure is detected by a sensor inside the pusher block as it presses against the syringe plunger.

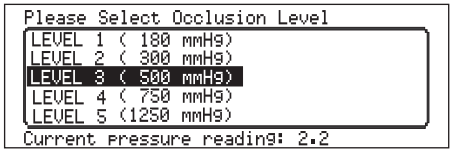
The actual pressure in the infusion line depends on a number of factors such as the viscosity of the liquid, the stiction of the syringe plunger, the bore of the line and the height of the pump relative to the patient. These variables mean that the pressure of liquid in the line can be measured only approximately at the syringe plunger.

Omnifuse pressure levels

You set the occlusion alarm in *levels*. There may be up to five levels ranging from Level 1 (low) to Level 5 (high).

The lower you set the alarm level, the faster the response time will be to a potential problem with the infusion line. For example, if Level 1 is selected, then as soon as pressure in the line begins to build up, the alarm will sound. The occlusion alarm is slower to sound if Level 5 has been selected.

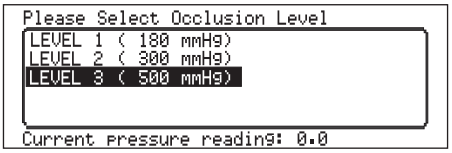
The Occlusion Levels menu shows the levels available, and the approximate pressure for the alarm to sound for each level.


Please Select Occlusion Level
LEVEL 1 (180 mmHg)
LEVEL 2 (300 mmHg)
LEVEL 3 (500 mmHg)
LEVEL 4 (750 mmHg)
LEVEL 5 (1250 mmHg)
Current pressure reading: 2.2

WARNING: The occlusion alarm level must be checked before starting an infusion to ensure that it is appropriate for that infusion. Failure to do so may result in an unacceptably slow time to occlusion alarm, resulting in patient injury or death.

Occlusion alarm lock level

In some clinical areas it may not be safe for the occlusion alarm to be set to a high level. In this case, a technician can configure the pump so that the menu only shows the levels that are acceptable.



This example screen shows how the screen would look with the Occlusion Alarm Lock level set to 3. For full details on how to lock the occlusion alarm level, see the *Omnifuse PCA Technical User Manual*.

Note: If necessary, the pump raises the occlusion alarm level temporarily during a Patient (PCA) or Clinician bolus, to avoid a nuisance occlusion alarm.

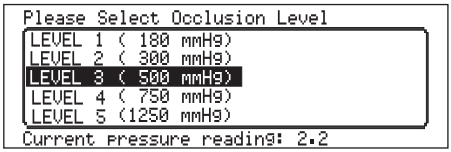
At the end of the bolus, the alarm level automatically returns to the selected level.

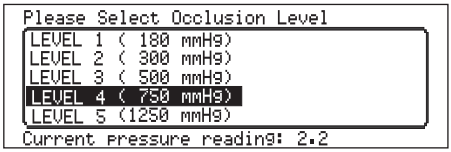
To find out how to change the occlusion level and monitor the occlusion pressure during an infusion, see page 3 - 12.

WARNING: If an occlusion alarm occurs, immediately clamp the line to eliminate the possibility of a bolus being delivered to the patient. Then inspect the fluid pathway for kinks, clogged catheter, etc. in order to remove the occlusion prior to restarting the infusion. An unintentional bolus of medication can result in patient injury or death.

How to set or change the occlusion alarm level

You can only set or change the occlusion alarm level if the cover is open.


Please Select Occlusion Level
LEVEL 1 (180 mmHg)
LEVEL 2 (300 mmHg)
LEVEL 3 (500 mmHg)
LEVEL 4 (750 mmHg)
LEVEL 5 (1250 mmHg)
Current pressure reading: 2.2


Please Select Occlusion Level
LEVEL 1 (180 mmHg)
LEVEL 2 (300 mmHg)
LEVEL 3 (500 mmHg)
LEVEL 4 (750 mmHg)
LEVEL 5 (1250 mmHg)
Current pressure reading: 2.2

1. If the PCA infusion has started, press Stop ⓞ to suspend it, then unlock and open the cover.
2. Turn the Command wheel to highlight the pressure icon: and press the Command wheel to display the Occlusion Level menu.
3. Turn the Command wheel to highlight the level at which you want the occlusion level alarm to sound.
4. Press the Command wheel to set the level and exit from the Occlusion Level screen.

   The pressure icon now shows the new level: .
5. Close and lock the cover then press Start ⓞ to resume or start the infusion.

Monitoring the pressure

While the pump is infusing, the icon **P** shows the selected occlusion alarm level, and a visual guide to the current infusion pressure. The line on the icon here: shows that the alarm is set at Level 3.

If the pressure rises, the pressure icon fills from left to right. In the icon below, the alarm is set at Level 5:

To monitor infusion pressure, check where the alarm level has been set and see how close the actual pressure is to it.

The pressure level will normally fluctuate as the infusion progresses. If you notice that it is steadily moving closer to the alarm level, you should check the patient and line immediately to find out why.

Using the Omnifuse Sleep mode

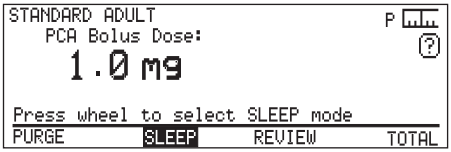
You may want to program the pump ready for an infusion, but connect it to the patient and start the infusion later.

For example, you may program a pump while the patient is in theatre, so it is ready to use when the patient arrives in the recovery area.

In this case, you should program the pump, then use the Omnifuse's special **SLEEP** mode. In this mode, the pump can be left switched on and ready to start when required.

Using SLEEP mode

To put the pump into sleep mode:



1. Program the infusion and confirm all the infusion parameters. The Infusion Start screen will display the **SLEEP** hotspot.

   Turn the Command wheel to highlight **SLEEP.**

2. Press the Command wheel. The pump displays this message.

   The pump will stay **ASLEEP** until you press the Command wheel to wake it up, see page 3 - 14.

While the pump is asleep

While it is asleep, the pump does not sound the Not Infusing alarm.

All the other alarms, for example, the low battery alarm, or syringe tampering alarm will still sound to warn you about conditions on the pump.

You can load or change a syringe when the pump is asleep, without waking it up, for example if the syringe is not available, but you want to set the pump up.

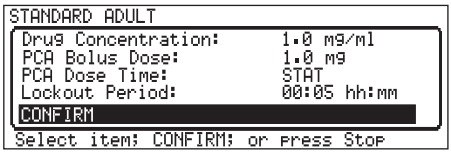
The screen shows the usual syringe loading messages then displays the **ASLEEP** screen once the loading is completed.

Waking the pump up

When you are ready to connect the pump to the patient and start the infusion, you must wake the pump up.

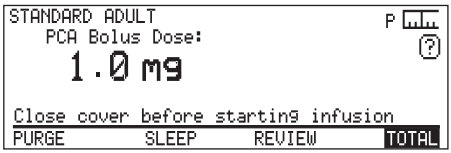
1. The **WAKE ME** hotspot is already highlighted.

   Press the Command wheel to wake the pump and exit from Sleep mode.



2. The pump takes you directly to the Review screen for the infusion that was programmed earlier.

   If you need to change settings at this point, highlight a setting and press the Command wheel.

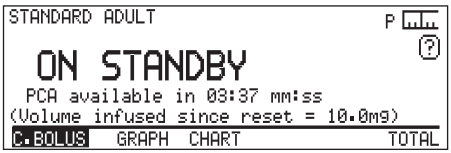


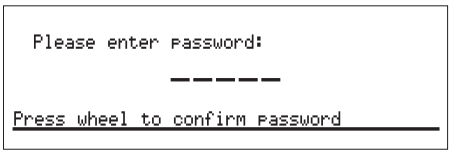
   When the settings are correct, turn the Command wheel to highlight **CONFIRM** and press the Command wheel to display the Infusion start screen.

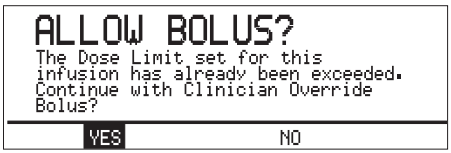
Giving a clinician override bolus

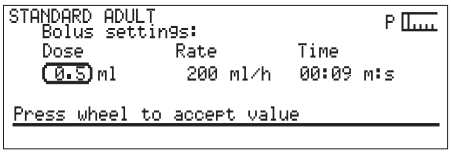
The Omnifuse PCA has a Clinician's Override Bolus feature, used to give an additional bolus dose between lockout periods, or if additional analgesia is required, for example before a clinical procedure.

The Clinician bolus screen is only accessible using a password.






ALLOW BOLUS?
The Dose Limit set for this infusion has already been exceeded. Continue with Clinician Override Bolus?
YES
NO



When the infusion is started, the **C.BOLUS** hotspot appears. However, the Clinician bolus can be turned off on a pump. In this case, the **C.BOLUS** hotspot does not appear.

For details on how to enable the Clinician override bolus feature, and how to set the password for accessing the Clinician Bolus screen, see the *Omnifuse PCA Technical User Manual.*

To give a Clinician bolus:

1. Turn the Command wheel to highlight **C.BOLUS** then press the Command wheel.

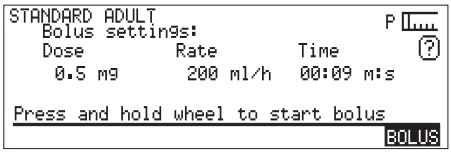
2. Enter the password for accessing the Clinician bolus feature, then press the Command wheel to accept.

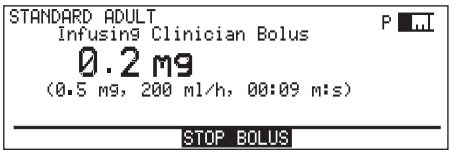
   If the Dose Limit has been exceeded, this screen is displayed.

   Press the Command wheel to confirm that you wish to continue with the bolus.

3. Enter the dose using the Command wheel or the numeric keypad. The pump displays the time required to deliver the bolus. Press the Command wheel to accept.

   You can adjust the Dose, Rate or Time: Highlight the field, press the Command wheel and then enter the correct value using the keypad, or Command wheel.





4. If the settings are applicable for the patient, start the bolus:
   - Press and hold the Command wheel for one second - the bolus will be delivered automatically.
5. If you need to stop before the whole dose has been delivered, press the Command wheel.

   At the end of the bolus, the running screen is displayed.

PCA Infusion Graph features

The **GRAPH** hotspot shows the PCA infusion profile on a graph and provides additional text information about the infusion.

If the **CHART** feature is in use, you can see pain, nausea, and sedation scores on graphs, see *PCA Charting,* page 3 - 21.

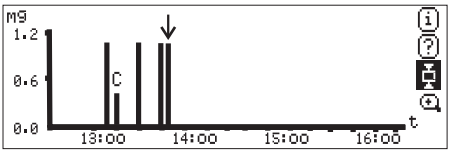
Time period for graphs

The graphs show data up to 24 hours old. If the infusion lasts longer than one day the oldest data is lost.

As the infusion proceeds the displayed time period changes to show either the last hour, the last four hours, the last 10 hours or the last 24 hours. If the infusion lasts for more than an hour you can examine the profile for each hour in greater detail by zooming in on it, as described below.

Example PCA infusion profile graph

This example shows the graphics icons, PCA bolus and clinician bolus doses that appear on an infusion profile graph:



The icons are described in the table below; all other items are described in *Graph annotation,* page 3 - 18.

Graph icons

To allow more room for the graph, all the hotspots have been turned into icons.

Icon	Name	Description
	Info	Displays settings and parameters for the current infusion.
	Help	Displays a screen of help information relating to the current state of the pump.
	Hold	Select to hold the screen display for one minute. While the screen is on hold, the icon changes to the Return icon below.
	Return	This is displayed when the pump is holding the Graph screen. Select this icon to return to the running screen, or previous graph screen. You can also use it to return to the full profile when you have zoomed in on a particular hour of a long infusion.
	Zoom	This is displayed during infusions longer than one hour, when the graph display can be zoomed to show more detail for a particular hour. Use the Return icon to go back to the full profile.

Graph annotation

The graph shows boluses, bad demands, any background rate and alarms or syringe changes.

Boluses on the graph

The PCA boluses that have occurred during the period are displayed as vertical lines on the graph. They show the time of the bolus and the size of the dose.

C above a vertical line marks a clinician override bolus.

If there is a loading dose, the graph shows it as a vertical line at the start of the infusion.

Bad demands

A bad demand is shown as a *thin* downward arrow.

If the patient has made multiple bad demands in a short period, the graph shows a ***thick*** downward arrow.

Background rate

If there is a background infusion, the graph shows this as a thick horizontal line marking the dose, with the rate displayed at the top of the screen.

Annotations on graphs

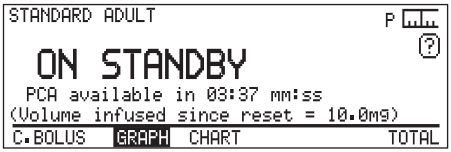
Letters are used on a graph to indicate special events at the time they occurred:

A alarm

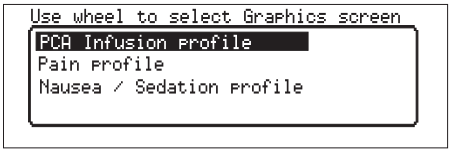
S syringe change.

Viewing a PCA infusion profile graph and text

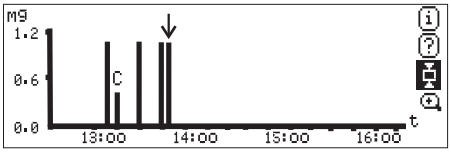
On an Omnifuse PCA pump, you can view the progress of the infusion as a graph. The **GRAPH** hotspot appears on the screen when you begin the infusion and is available until you press and hold Stop to end the infusion.



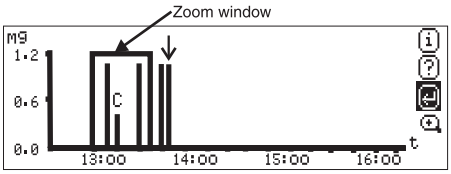
1. Turn the Command wheel to highlight the **GRAPH** hotspot and press the Command wheel.



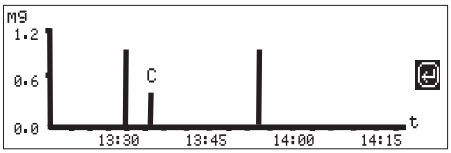
If Charting is in use on the pump, you will see this menu. Turn the Command wheel to highlight PCA Infusion Profile - then press the Command wheel.



The PCA infusion profile graph will look something like this. Select the Hold icon to keep the graph on the screen. The Hold icon is replaced by the Return icon.

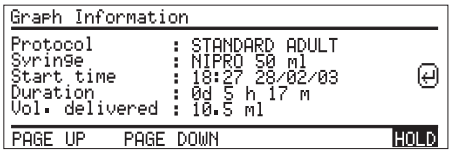


2. Select the Zoom icon to display the Zoom window. Turn the Command wheel to move the window left or right along the graph until it is positioned over the hour that you want to examine.



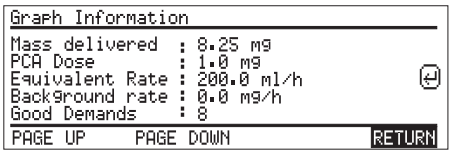
3. Press the Command wheel to display the selected hour in greater detail.

4. To leave the graph, select the Return icon.

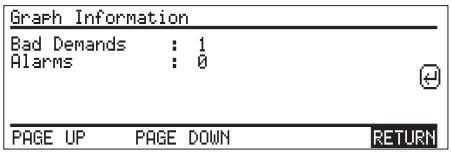


5. To view the text screen associated with the graph select the Info icon (i). This displays a page of text relating to the infusion.

6. Press the Command wheel to **HOLD** the screen for one minute so that you can read the first page of details.



7. Select **PAGE DOWN** to see the following pages.



PAGE DOWN shows the final page of information.

PAGE UP takes you to previous pages.

8. When you have finished, select the Return icon (↵) to go back to the graph screen, or **RETURN** to leave the Graphics display and return to the infusion screen.

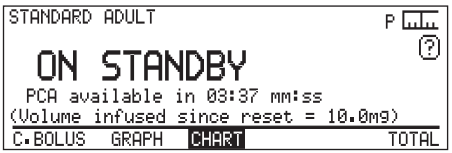
PCA Charting

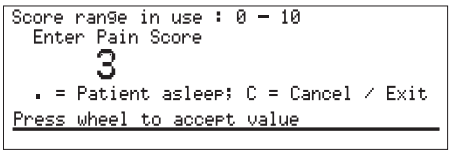
The Omnifuse PCA offers a Charting feature which you can use to record the patient's pain and/or nausea and sedation scores on the pump.

Once you have entered the scores from the **CHART** hotspot, you can view a condensed score chart from the pump's **GRAPH** hotspot, or the full data using the Omnifuse Drug Protocol Management System.

Entering pain, nausea and sedation scores

You can enter patient chart scores when the infusion is running, or suspended:





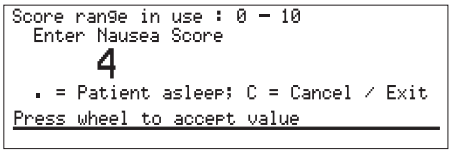
1. Turn the Command wheel to highlight the **CHART** hotspot and press the Command wheel.

2. The first score entry screen appears, showing the last recorded score. All the score entry screens work the same way.
   - Enter the score requested on the screen using the numeric keypad, or by turning the Command wheel.
   - Press the Command wheel to accept.

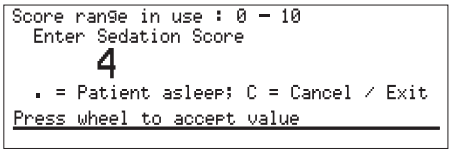
   The scores can be in the range 0-3, 0-10 or 0-100. Press the Decimal point key on the keypad to enter **'.'** if the patient is asleep.

   In the example here, a combined (at rest/movement) pain score is requested. If the pump is set up to record separate scores for **pain at rest** and **pain on movement**, it will ask you to enter pain scores on two screens.

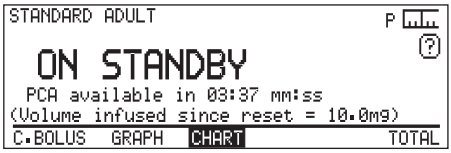
Note: Charting may be turned off on a pump. If the pump is set up so that Charting is available, the **CHART** hotspot will be displayed.



3. When displayed, enter the score on the Nausea screen and press the Command wheel.



4. Complete the Sedation screen in the same way.

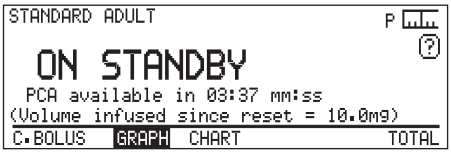


5. When you have entered all the scores, the pump automatically returns to the infusion screen.

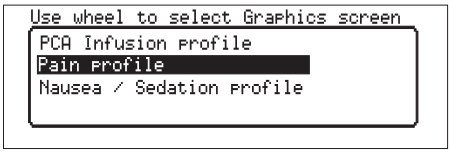
You can view the scores that have been entered for the patient on a graph, see page 3 - 23.

Viewing pain, nausea and sedation graphs

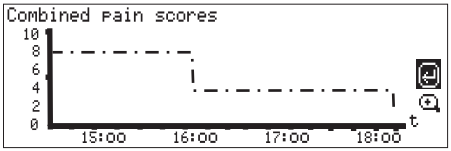
On an Omnifuse PCA pump, with the **CHART** feature in use for recording the patient's nausea, pain and sedation scores, you can view the data as graphs from the **GRAPH** hotspot.



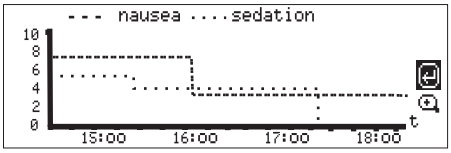
1. Turn the Command wheel to highlight the **GRAPH** hotspot and press the Command wheel.



2. On the menu, turn the Command wheel to highlight Pain or Nausea / Sedation, then press the Command wheel. When the graph is displayed, select the Hold icon to keep the graph on the screen. The Hold icon is replaced by the Return icon.



The Pain profile graph shows the pain score plotted on a graph. You may see two lines: *pain at rest* and *pain on movement*, or one combined line, depending on how you recorded pain scores.



Nausea and Sedation are plotted as two lines on the chart if you select the Nausea/sedation graph. On both charts, when the score is recorded as 'patient is asleep', the chart shows a thick horizontal line.

3. On the Pain and Nausea/Sedation graphs, you can select the Zoom icon to display the Zoom window. Use this to define a period you wish to view in more detail.

   The zoom feature works as described for the Infusion Profile graph, described on page 3 - 19.

User Programmed infusions

The Omnifuse PCA pump can be used for a variety of PCA infusions, which are normally set up in the pump as Protocols.

The pump can also be set up to display the programming steps, instead of using a pre-defined protocol.

If the pump has been set up for use without any protocols, or if you choose the **USER PROGRAMMED** option from the Protocol menu, you can enter a User Programmed infusion.

If you program an infusion this way, you cannot save the settings as a named protocol to appear on the menu. To save a named protocol in the pump, you must use the Omnifuse Drug Protocol Management System, see the *Omnifuse PCA Technical User Manual*.

An example showing all the screens available in a user programmed sequence is shown on the next page.

Programming steps

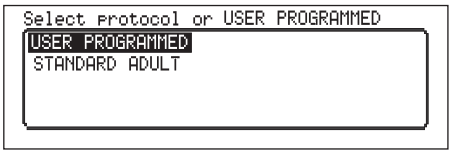
The programming steps can include any of the following parameters:

Parameter	Description
Dose units	For example, mg.
Drug concentration units	For example, mg/ml.
Drug concentration	For example 1 mg/ml.
Loading dose	The size of dose to be delivered as soon as you press Start ⏀ to begin the infusion.
PCA Bolus dose	The size of the dose that will be delivered when the patient presses the button on the patient handset.
PCA Dose time	The period over which the *PCA Bolus dose* should be delivered - this sets the infusion rate, for example 1ml delivered in 18 seconds sets the rate to 200 ml/h.
Lockout period	The period the pump will wait between one PCA bolus and the next. Any demands made during this period are recorded on the pump as Bad demands.
Dose limit period	Can be set between 1 and 8 hours or the duration of the infusion, see the *Omnifuse PCA Technical User Manual*.

Parameter	Description
Dose limit	Maximum amount which can be delivered to the patient within the infusion.
Demands	Can be specified instead of a dose limit, this is the maximum number of demands the patient can make within the specified *dose limit period*.
Background infusion	The rate the pump will infuse continuously. The pump starts the background infusion as soon as you press Start ⓘ and continues in-between patient boluses. If the patient requires a continuous infusion of analgesia, for example because they cannot press the button on the handset, this parameter can be used with the *PCA Bolus dose* set to zero. If the PCA bolus dose is set to zero, the background rate may be programmed up to 800 ml/h, depending on the size of the syringe, see the *Specification* for details.

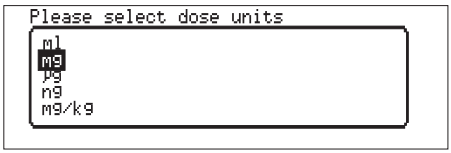
User programming screens

The following pages show all the available parameters that may appear in a user programming sequence.

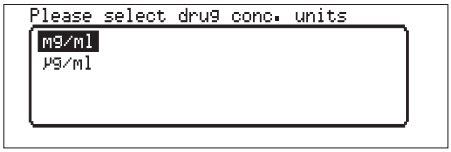


1. If a Protocol menu is displayed, select **USER PROGRAMMED**. When you press the Command wheel, the first user programmed parameter is displayed on the screen.

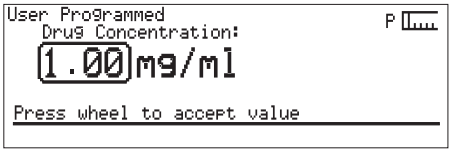
   If no protocols are in use on the pump, the Dose units screen is displayed once you have loaded the syringe.



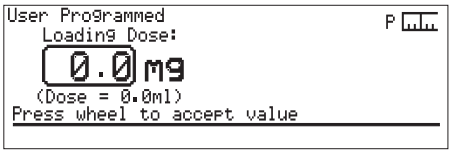
2. Select the Dose units and press the Command wheel to accept. When you press the Command wheel to accept, you move on to the next step.



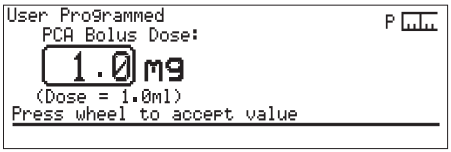
3. Select the Drug concentration units and press the Command wheel to accept.



4. Enter the Drug concentration using the numeric keypad or the Command wheel and press the Command wheel to accept.

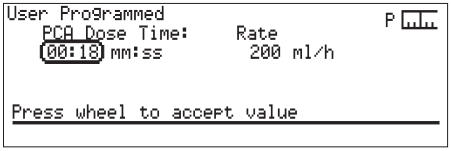


5. Enter the Loading Dose and press the Command wheel to accept.

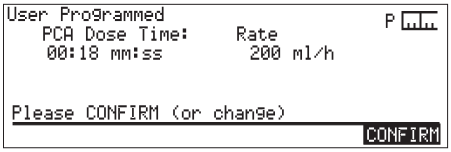


6. Enter the PCA Bolus Dose and press the Command wheel to accept.

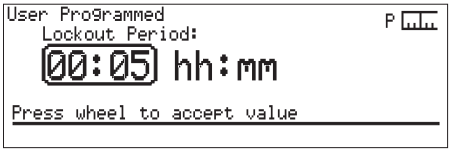
You do **not** see the next two screens if the *PCA Dose Duration* is set to **STAT.** For full details, see the Configuration Menu section in the *Omnifuse PCA Technical User Manual*.



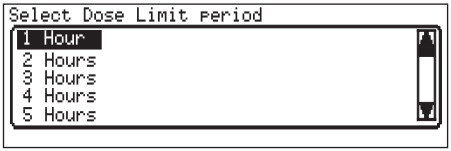
7. Enter the rate for the PCA bolus by entering the PCA Dose Time. As you adjust the time, the rate is altered automatically. Press the Command wheel to accept.



8. Confirm the PCA Dose Time and Rate. Press the Command wheel to accept.

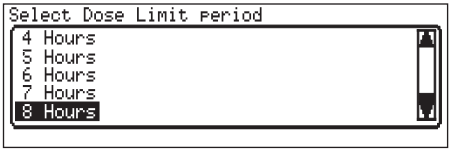


9. Enter the Lockout Period and press the Command wheel to accept.

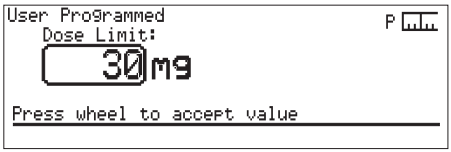


10. Select the Dose Limit period.

Scroll the screen to see all the options, from 1 hour to 8 hours.

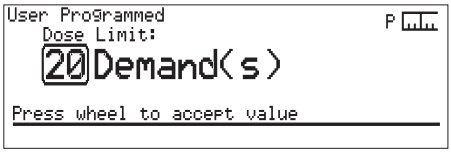


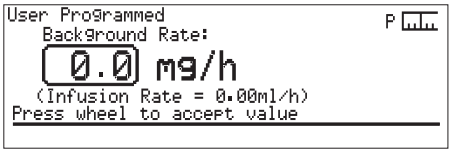
Highlight the period required and press the Command wheel to accept.



11. Enter the total Dose Limit within the period specified. This is the total amount of the drug that may be administered, including PCA bolus doses, any Clinician Bolus or Loading Dose, and continuous background infusion, if there is one.

    Alternatively, the pump may be configured so you enter the Dose Limit as a number of demands that are allowed over the infusion.

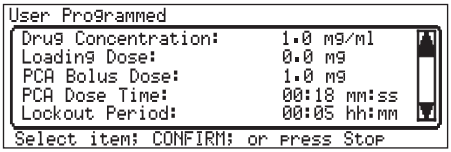




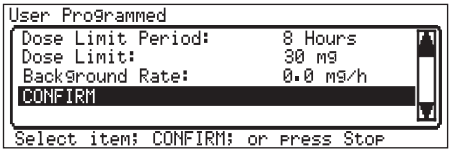
12. Enter the Background Rate, which can be left at 0.0.

    This is the final parameter. When you press the Command wheel the pump will display the Review screen.

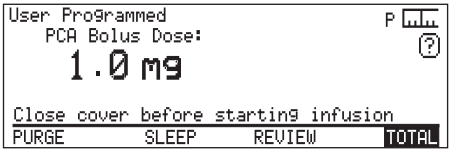
Reviewing User Programmed settings


User Programmed
Drug Concentration: 1.0 mg/ml
Loading Dose: 0.0 mg
PCA Bolus Dose: 1.0 mg
PCA Dose Time: 00:18 mm:ss
Lockout Period: 00:05 hh:mm
Select item; CONFIRM; or press Stop

1. On the Review screen you can check the prescription. Make any changes by highlighting a setting and pressing the Command wheel.



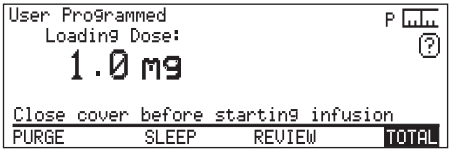
2. Turn the Command wheel to scroll through the parameters. At the end of the parameters, highlight **CONFIRM** and press the Command wheel.



3. The Infusion Start screen is displayed. This will show the

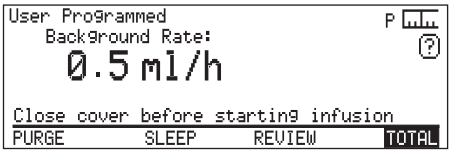
   PCA Bolus Dose

   or the



   Loading Dose

   or the



   Background Rate.

Starting a User Programmed infusion

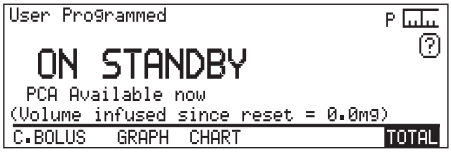
Before starting the infusion, you should carry out pre-infusion checks as required:

- Select **TOTAL,** see page 3 - 6.
- Select **PURGE**, see page 3 - 10.
- Change the Occlusion Alarm level, see page 3 - 12.
- Select **SLEEP**, see page 3 - 13.
- Select **REVIEW** to go back to the Review screen.

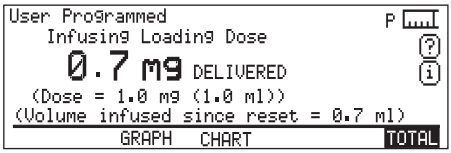
When you have confirmed the settings, and carried out all pre-infusion checks:

- Close and lock the cover then press Start ⓘ.

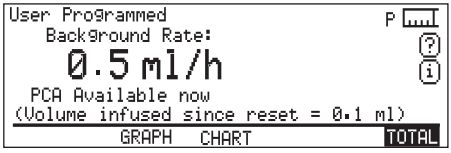
What happens depends on whether you have specified a Loading Dose, or Background Rate.



If neither Loading Dose, or Background Rate is specified, the pump goes **ON STANDBY**, waiting for the patient to press the button on their handset.



If you have specified a Loading dose, when you press Start ⓘ this screen is displayed and the Loading dose is delivered. After the Loading Dose, the pump goes **ON STANDBY**, with a timer on the screen counting down to show how much of the Lockout period remains. Alternatively, it begins the continuous background infusion if one is specified.



If you have specified a Background Rate, when you press Start ⓘ the pump begins a continuous background infusion.

The screen shows when a PCA bolus is available. (The **PCA Available now** message shown in this example appears if a PCA Bolus dose has been programmed.

Ending an infusion

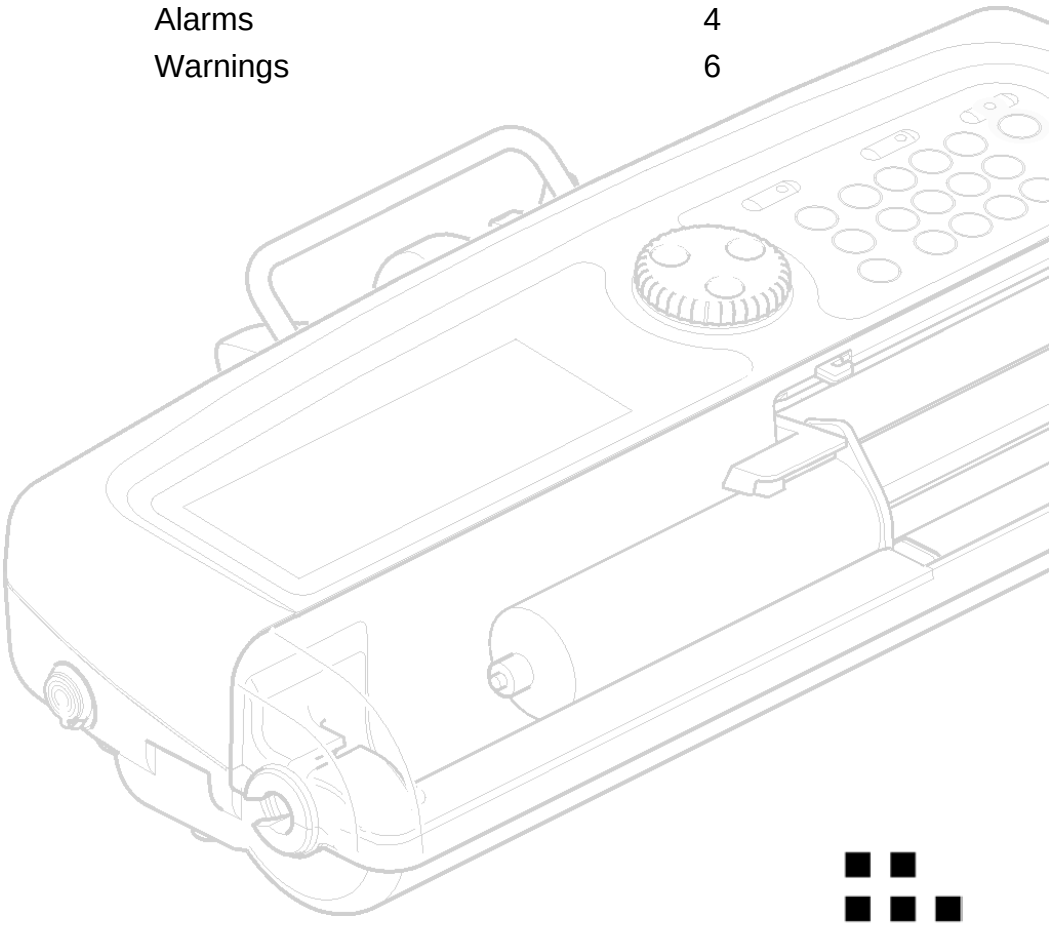
To end an infusion:

- Press and hold Stop ⊜ - you must keep it pressed for at least two seconds.

If you only press the Stop key briefly, the infusion will be suspended, and can be restarted if you open and shut the cover and press the Start key ⊛.

Chapter 4
Troubleshooting

	Page
Introduction	1
Alarms	4
Warnings	6



Introduction

This chapter offers troubleshooting advice if the pump sounds the alarm. It covers all the alarms and warnings that may be displayed on the Omnifuse PCA screen to notify you of an operating or equipment problem.

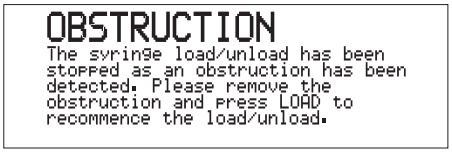
The chapter also covers System Faults, which sound the alarm, but can only be resolved by a technician, see page 4 - 3.

Format of Omnifuse PCA Alarms and Warnings

Omnifuse PCA alarms and warnings are displayed on the screen in a standard format.

- The error message is displayed in large letters at the top of the screen
- Below this, on-screen information tells you how to clear the error.

This is an example of an alarm screen:


OBSTRUCTION
The syringe load/unload has been stopped as an obstruction has been detected. Please remove the obstruction and press LOAD to recommence the load/unload.

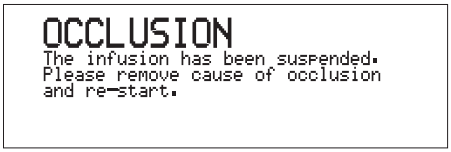
Lists of all alarms start on page 4 - 4 and warnings start on page 4 - 6.

How to handle Alarms

The pump sounds the alarm for conditions that require immediate attention. The LCD display flashes red and displays a message. If a PCA infusion has been started, it is suspended.

Examples of conditions causing an alarm are:

- An operating problem, for example an occlusion has been detected, or the syringe is empty. This is the Occlusion alarm screen:



- An external problem has occurred, for example the syringe load process has failed because the pusher has detected an obstruction. See a full list of Alarm messages on page 4 - 4.

If the pump sounds the alarm:

The screen always displays a message explaining what has caused the alarm.

1. Read the message.
2. Press Alarm Silence (A) to silence the alarm and clear the message.
3. Check the patient and clear the problem which caused the alarm.
4. Restart the infusion.

How to handle Warnings

Warnings are displayed for conditions that require attention, but are not urgent problems. The alarm does not sound; instead the pump sounds a double beep. If the PCA infusion has been started, it continues.

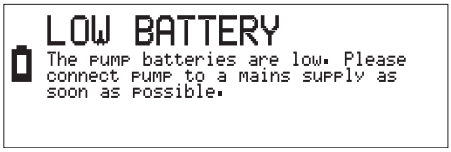
There are two types of warning, *repeated* and *one-off*, which are explained here. A list of warnings starts on page 4 - 6.

Repeated warnings

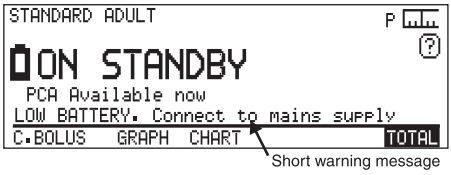
The pump displays the error message and on-screen information briefly, then shows the running screen, with the short message on the message line.

The error message and running screen alternate until you take action to resolve the warning condition.

For example, if you leave the pump running on battery power, and the batteries become depleted, you will see the warning message:



After three seconds this screen is replaced with the running screen where the message line displays a short message.



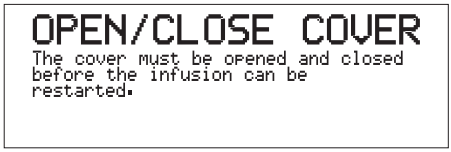
The message is repeated until you connect the pump to a mains supply, or end the infusion and switch off.

One-off warnings

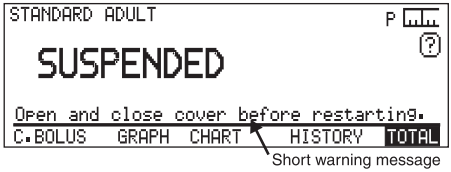
Warnings may be displayed while you are programming the PCA infusion, or before the infusion is started, or when it is suspended.

These warnings are displayed on the screen for three seconds. You must follow the instructions on the screen before you can start the infusion.

For example, if an infusion is suspended, and you press the Start ⏀, the pump displays this message:



After three seconds this screen is replaced and the message line displays a short warning message:



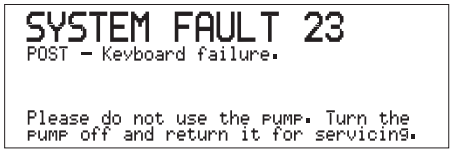
If the pump displays a warning:

1. Read the message.
2. Carry out the action suggested on the screen.

How to handle System faults

The pump carries out a self-test when it is switched on and continually monitors all internal components while it is in use.

If it detects an error with one of the components the pump sounds a continuous alarm and displays a System Fault screen with a fault number and a message, for example:



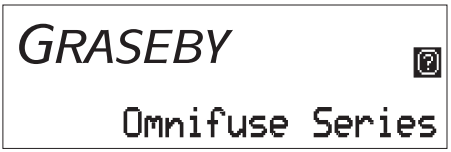
If the pump displays a system fault with a number:

1. The Alarm Silence key (A) has no effect. You must switch off the pump to silence the alarm. You do not need to note the fault number since this will be saved in the pump.
2. **Do not use the pump**. It must not be used again until it has been checked by a technician.

System fault at switch on

The system fault screen described opposite appears if a *component* fails at switch on or at any other time.

The following screen would be displayed only if a fault is discovered at switch on:



If you see this screen, you can press the Command wheel to display a help screen showing further information.

Do not use the pump. It must not be used again until it has been checked by a technician.

If the pump sounds a continuous alarm with no message:

When the pump is being used on battery, an independent battery monitor is active. This provides an additional check on the battery condition.

If the pump's alarm sounds but no message is displayed on the screen, the independent battery monitor has detected a problem.

The alarm cannot be silenced and the pump cannot be used. It must be taken to a qualified technician for repair.

Alarms

The pump sounds a continuous alarm and the screen flashes red when any of these messages are displayed.

You must press Alarm Silence (A) to clear the alarm. For more details, see *How to handle Alarms,* page 4 - 1.

Error message	On-screen information	Short message on screen
BATTERIES DEAD	Please connect pump to a mains supply immediately. The pump will automatically switch off.	**URGENT: BATTERIES EXHAUSTED**
CLAMP OPENED	The syringe clamp was opened during an infusion. The infusion has been suspended.	**CLAMP OPENED**
COMMS FAILURE	The remote connection to the pump has been broken.	**COMMUNICATIONS FAILURE**
CONTROL FINISHED	External controller terminated control whilst infusing.	**CONTROL TERMINATED**
COVER OPENED	The cover was opened during an infusion. The infusion has been suspended.	**COVER OPENED**
DOSE EXCEEDED	The Dose Limit set for the infusion has been exceeded. The infusion has been suspended.	**DOSE LIMIT EXCEEDED**
FAULTY HANDSET	A handset failure has been detected. This may indicate a faulty handset, or simply the handset is not connected.	**HANDSET NOT CONNECTED**
LOAD NOT COMPLETE	The syringe loading operation did not complete within the time allowed. Open and close the barrel clamp then try loading the syringe again.	**SYRINGE LOADING NOT COMPLETED IN TIME**

Error message	On-screen information	Short message on screen
OBSTRUCTION	The syringe load/unload has been stopped as an obstruction has been detected. Please remove the obstruction and press LOAD to continue the load/unload.	**OBSTRUCTION**
OCCLUSION	The infusion has been suspended. Please remove cause of occlusion and re-start.	**OCCLUSION. See Help (?)**
POWER FAILURE	Handset POWER failure has been detected. This may indicate a faulty POWER supply, or the POWER line itself is faulty.	**HANDSET POWER FAILURE**
SYRINGE EMPTY	The infusion has been suspended. Please load a new syringe or end this infusion.	**SYRINGE EMPTY. See Help (?)**
SYRINGE TAMPERING	The syringe has been disturbed. Open and close the barrel clamp then try loading the syringe again.	**SYRINGE TAMPERING DETECTED**
SWITCH FAILURE	The handset switch has been pressed for longer than 30 seconds. This may indicate a problem with the switch. The infusion has been suspended.	**HANDSET SWITCH PRESSED FOR TOO LONG**

Warnings

There are two lists of warnings in this section: One-off warnings, and Repeated warnings.

For more information these types of warning and details on what to do if the pump displays a warning, see *How to handle Warnings,* page 4 - 2.

One-off warnings

Error message	On-screen information	Action
ALARM STATE	The previous alarm has not been cleared. Clear alarm condition, press ALARM SILENCE, or press STOP as appropriate.	When this warning message disappears from the screen, read the short message line. It will tell you the alarm state that needs to be cleared.
BRAND LOCKED	The pump can only be used with this brand of syringe.	The screen displays the name of the only brand of syringe which can be used with this particular pump. If this is not correct, return the pump to the technician.
CONC. INVALID	The entered or derived drug concentration is too high/ low. The screen indicates the max/min concentration allowed.	Check the settings you have programmed against the patient's prescription.
CONFIG INVALID	When Dose Limit is set to DEMANDS, the Dose Limit Period must be set to INFUSION.	Only appears when a technician configures the pump for use, see *Omnifuse PCA Technical User Manual*.
CONFIRM / REVIEW	The infusion programming sequence has not been completed. Ensure that all infusion parameters have been confirmed.	Select **REVIEW** to check/change the infusion parameters and **CONFIRM** them. You can then press start.
COVER LOCKED	This option cannot be selected when the cover is locked.	Press Stop ⓥ to suspend the infusion before unlocking the cover.

Error message	On-screen information	Action
COVER UNLOCKED	The infusion cannot be started with the cover open or unlocked.	Shut the cover and lock to secure it before pressing Start ⓘ.
DOSE EXCEEDED	The Dose Limit set for the infusion has been exceeded. The infusion has been suspended. Stop infusion to clear alarm condition.	Press Stop ⓘ to silence the alarm. Check the prescription to see if Dose Limit has been entered correctly. End infusion, reprogram and restart.
DOSE INVALID	The derived dose volume is too high/low. The maximum/ minimum dose allowed is _	Check the settings you have programmed against the patient's prescription.
DRUG MASS INVALID	The drug mass is too high/ low. The Maximum/ minimum drug mass allowed is _	Check the settings you have programmed against the patient's prescription.
DRUG VOL. INVALID	The drug volume is too high/ low. The Maximum/ minimum drug volume allowed is _	Check the settings you have programmed against the patient's prescription.
DURATION INVALID	The lockout period is too long/short. The maximum/ minimum allowed is _	Check the prescription and re-enter the lockout period, dose or bolus duration.
	The infusion, dose or bolus duration is too short/long. The minimum/maximum duration allowed is _	
EAR NOT CLAMPED	The syringe ear has not been clamped. Please reload the syringe, checking the syringe ear is correctly located.	Load the syringe again and place the syringe ear, or flange, in the syringe ear slot.
FIXED PROTOCOL	This parameter (or the whole protocol) is fixed and cannot be altered.	You cannot change the selected parameter in this protocol. Accept this protocol/parameter as it is, select a different protocol, or choose **USER PROGRAMMED**.

Error message	On-screen information	Action
HANDSET FAILURE	Handset SWITCH and LED failures have been detected. The infusion has not been started.	Switch off the pump, press the handset connector firmly into the socket, then switch on again. If the message appears again, the pump must be checked by a qualified technician.
HANDSET NOT FOUND	A handset failure has been detected. The infusion has not been started. The failure may indicate a faulty handset, or simply that the handset is not connected.	Press the handset connector firmly into the socket then try to start the infusion. If the message appears again, the pump must be checked by a qualified technician.
HISTORY DOWNLOAD	The infusion cannot be started whilst a history download is in progress.	Wait for the download to end, or press stop if the pump should not be downloading history.
INVALID DATE/TIME	The start/stop date or time you entered is incorrect. Please correct.	Re-enter the date and time for the History display.
INVALID PASSWORD	The password entered for Clinician Override was invalid.	If you know the correct password, re-enter it.
INVALID RATE	The bolus rate is invalid. Please adjust the bolus time or dose.	Check the settings you have entered for the bolus. Re-enter the duration/size of dose, as the settings you have entered resulted in a rate that is too fast.
INVALID SYRINGE	Please replace the syringe.	You must use a syringe of the same brand and size if you need to replace a syringe during an infusion.
INVALID TIME	The bolus duration is invalid. Please adjust the bolus dose or rate.	Check the settings you have entered for the bolus. Re-enter the infusion rate/size of dose, as the settings you have entered resulted in a duration that is too short or long.

Error message	On-screen information	Action
KVO RATE REDUCED	The configured KVO rate is greater than the infusion rate or the background rate. The KVO rate has been reduced to an appropriate value.	For your information only, you do not need to take any action as the automatic adjustment means the infusion will start.
LED FAILURE	Handset LED failure has been detected. The infusion has not been started. The failure may indicate a faulty LED, or a cable/connector fault.	The pump must be checked by a qualified technician.
LOAD FAILED	The syringe load sequence has failed. Try load sequence again ensuring that the mechanism is not obstructed in any way.	Check around the syringe and the pusher for any obstruction. Remove and reload the syringe. If the problem persists, get the pump checked by a qualified technician.
LOAD FAILURE	Try load sequence again ensuring that the mechanism is not obstructed in any way and that the syringe has not been over-filled.	The pump has sensed that the syringe plunger is not where it should be. Remove the syringe and check it. Reload the syringe.
LIMIT INVALID	The Dose Limit value entered is too high/low. Maximum/minimum value is _.	Check the prescription to find the dose limit specified for this patient, and re-enter.
NO SYRINGE	None of the standard syringe brands are enabled. At least one should be enabled. Select and change at least one brand to ENABLED.	Only appears when a technician configures the pump for use, see *Omnifuse PCA Technical User Manual*.
NO RECORDS FOUND	No history records exist between the dates specified. Please select alternative dates, or exit history.	Check the range of dates you have entered.

Error message	On-screen information	Action
OPEN/CLOSE COVER	The cover must be opened and closed before the infusion can be restarted.	After changing a setting, open and shut the cover, then press Start ⓘ.
PASSWORD CHANGE	The Clinician Override password has been changed.	Only appears when the technician is configuring the pump, see *Omnifuse PCA Technical User Manual*.
PASSWORD CHANGE	The Configuration password has been changed.	Only appears when the technician is configuring the pump, see *Omnifuse PCA Technical User Manual*.
PASSWORD ERROR	The entered password is the same as one of the other passwords. All passwords must be different. Please enter another password.	Only appears when the technician is configuring the pump, see *Omnifuse PCA Technical User Manual*.
PASSWORD MISMATCH	Entered passwords do not match. The password has not been changed.	Only appears when the technician is configuring the pump, see *Omnifuse PCA Technical User Manual*.
POWER FAILURE	Handset POWER failure has been detected. The infusion has not been started. The failure may indicate a cable/connector fault.	The pump must be checked by a qualified technician.
PROTOCOL ERROR	An error occurred whilst trying to load the selected protocol. Please select another protocol, or select USER PROGRAMMED if that is available.	You should consider having the pump checked by a technician since all protocols available should load successfully.
RATE REDUCED	The default bolus rate has been reduced to the maximum allowed by the loaded syringe and configured maximum bolus rate.	The maximum bolus rate is restricted by the size of the loaded syringe. If the maximum bolus rate is not suitable for the prescription, you must use a larger syringe.

Error message	On-screen information	Action
RATE INVALID	The background rate entered is too high for the loaded syringe. The maximum rate allowed is _	Check the setting you have made for the Background infusion rate against the patient's prescription. If this is correct, you must use a larger syringe.
	The derived or entered infusion rate is too high/low. The screen indicates the max/min rate allowed.	
	The bolus rate is too high/ low. The maximum/ minimum allowed is _	
SCORE INVALID	The entered score is too high. The maximum allowed is _	Re-enter the patient's pain, sedation or nausea score within the range displayed.
SWITCH FAILURE	Handset SWITCH failure has been detected. The infusion has not been started. The failure may indicate a cable/connector fault.	The pump must be checked by a qualified technician.
SYRINGE LOADED	Syringe brands cannot be enabled or disabled whilst a syringe is loaded. Unload syringe first.	Only appears when a technician configures the pump for use, see *Omnifuse PCA Technical User Manual*.
TIME INVALID	The entered time is invalid. Only times in the range 00:00 to 24:00 may be entered.	Enter the correct time using the 24-hour clock. Remember to enter 4:00 as 04:00.
VOLUME INVALID	The infusion volume is too high/low. The maximum/ minimum volume allowed is_	Check the setting you have made against the patient's prescription.
WEIGHT INVALID	The patient weight is too high/low. The Maximum/ minimum patient weight allowed is _	Check the patient's weight against the weight you have entered.

Repeated warnings

Error message	On-screen information	Short message on screen
_ ml TO END	The syringe is nearly empty. There is now less than _ ml to the end of the infusion.	**LESS THAN __ ml TO END**
AC MAINS FAILURE	The mains power supply has been disconnected. The pump is now running on battery.	**AC MAINS FAILURE**
BACKUP BATTERY	The backup battery should be replaced, The current date/time may be lost.	**BACKUP BATTERY LOW**
BATTERY FAULTY	The pump cannot be used on battery.	**BATTERY FAULT. Do not use on battery**
COMMS FAILURE	The remote connection to the pump has been broken.	**COMMUNICATIONS FAILURE**
HANDSET FAILURE	An unexpected Handset failure has been detected. Investigate reason for this.	**HANDSET failure**
HANDSET LED	Handset LED failure has been detected. Investigate reason for this.	**Handset LED failure**
HANDSET SWITCH	Handset SWITCH failure has been detected. Investigate reason for this.	**Handset SWITCH failure**
KVO	Infusion ended. Pump now running in KVO mode at _	**NOW RUNNING AT KVO RATE __**
LIMIT EXCEEDED	The number of bad demands allowed within the lockout period has been exceeded. Investigate reason for this.	**BAD DEMAND LIMIT EXCEEDED**
LOW BATTERY	The pump batteries are low. Please connect pump to a mains supply as soon as possible.	**LOW BATTERY. Connect to mains supply**

Error message	On-screen information	Short message on screen
NOT INFUSING	The pump is not infusing. Please set up and start the infusion or switch the pump off.	**NOT INFUSING**
PUMP TOO COLD	The internal temperature of the pump is lower than expected. Please move pump to a warmer environment.	**PUMP TOO COLD**
PUMP TOO HOT	The internal temperature of the pump is higher than expected. Please move pump to a cooler environment.	**PUMP TOO HOT**
SOUNDER FAILURE	No sound can be detected. Remove pump from service as soon as possible.	**SOUNDER FAILURE**
SWITCH and LED	Handset SWITCH and LED failures have been detected. Investigate reason for this.	**Handset LED and SWITCH failure**
VOLUME LOW	There is insufficient fluid remaining in the syringe to deliver another complete bolus dose.	**VOLUME INSUFFICIENT FOR NEXT BOLUS**

Specification/Standards

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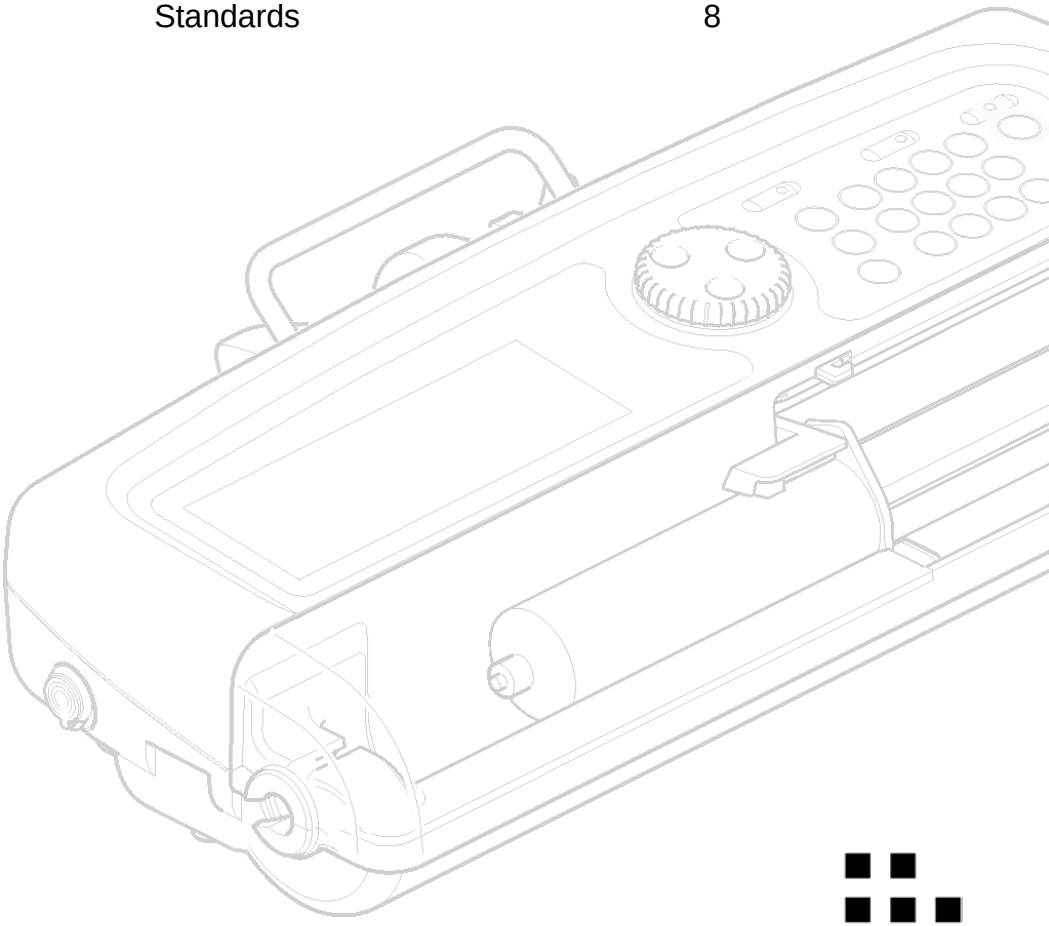


Specificatioins

Weight	3.5 kg (approx)
Dimensions	384 mm x 170 mm x 92 mm (not including pole clamp)
Orientation	Horizontal, either mounted on a pole or flat on a stable horizontal surface
Display	LCD super twist with viewable area of approximately 105 mm x 32 mm. Green backlight when connected to AC mains supply and for up to 3 minutes (configurable) following a key-press when operating on battery. Backlight flashes red during an alarm unless configured Off
Data retention time	More than 12 months
Operating temperature	5° to 40°C
Storage temperature	-20° to 55°C
Relative humidity	20% to 90% non-condensing
Atmospheric pressure	700 - 1060 millibars
Options	Locking pole clamp
Alarm volume	Louder than 65 dBA at 1 metre at maximum volume

Power supply

AC power supply	100 - 240 V at 50/60 Hz. 50 W
Battery type	Set of three Cyclon™ sealed lead-acid batteries
Battery operating time	10 hours at 5 ml/h
Battery charge time	10 hours
Backup battery	Single 3 V Lithium battery

Infusion flow rates

Range	0.1 to 800 ml/h dependent on syringe size
Accuracy	±2% (not including syringe variability) measured over the 2nd hour of an infusion at 1 ml/h and at 5 ml/h with a Braun Omnifix 50 ml syringe and 150 cm extension set
Bolus accuracy	±5% with a Braun Omnifix 50 ml syringe and 150 cm extension set measured over 25 1ml boluses
KVO rate	Between 0.05 ml/h and 2 ml/h
Purge rate	50, 100, 200, 400, 800 ml/h (upper limit dependent on syringe size)
Bolus rate	0.1 to 800 ml/h (upper limit dependent on syringe size) in increments of: 0.1 ml/h up to 100 ml/h 1 ml/h above 100 ml/h

Maximum infusion flow rates

Syringe Size (ml)	Flow Rate (ml/h)
2	50 ml/h
3	50 ml/h
5	100 ml/h
10	200 ml/h
20	400 ml/h
25	400 ml/h
30	600 ml/h
50/60	800 ml/h

Programming ranges

PCA Bolus programming ranges by infusion unit:

Unit	Range	Increment
ml	0.1 to 99.9	0.1
mg/kg	0.1 to 99.9	0.1
µg/kg	0.1 to 999	0.1 up to 100, 1 above 100
ng/kg	0.1 to 999	0.1 up to 100, 1 above 100
mg	0.1 to 99.9	0.1
µg	0.1 to 999	0.1 up to 100, 1 above 100
ng	0.1 to 999	0.1 up to 100, 1 above 100

Background infusion rate programming ranges by infusion unit

Background Rate set and PCA Bolus dose not zero:

Unit	Range	Increment
ml/h	0.1 to 20	0.1 up to 100, 1 above 100
mg/kg/h	0.1 to 99.9	0.1
µg/kg/h	1 to 999	1
ng/kg/h	1 to 999	1
mg/h	0.1 to 500	0.1 up to 100, 1 above 100
µg/h	0.1 to 999	0.1 up to 100, 1 above 100
ng/h	0.1 to 999	0.1 up to 100, 1 above 100

Continuous infusion rate programming ranges by infusion unit

Background Rate set when PCA Bolus dose is zero:

Unit	Range	Increment
ml/h	0.1 to 800	0.1 up to 100, 1 above 100
mg/kg/h	0.1 to 99.9	0.1
µg/kg/h	1 to 999	1
ng/kg/h	1 to 999	1
mg/h	0.1 to 500	0.1 up to 100, 1 above 100
µg/h	0.1 to 999	0.1 up to 100, 1 above 100
ng/h	0.1 to 999	0.1 up to 100, 1 above 100

Infusion pressure

Maximum infusion pressure	Note
1250 mmHg	This value is approximate and is the pressure at the front face of the syringe plunger. It also assumes an ideal syringe with no stiction and a low infusion rate.

Occlusion sensing - pressure levels

Approximate pressure	Alarm level	Note
180 mmHg	Level 1	These values are approximate and are the pressure at the front face of the syringe plunger. The values also assume an ideal syringe with no stiction and a low infusion rate.
300 mmHg	Level 2	
500 mmHg	Level 3	
750 mmHg	Level 4	
1250 mmHg	Level 5	

Occlusion sensing - time to occlusion

Alarm level and infusion rate	Number of minutes to occlusion	Bolus on occlusion release
Level **1** @ 1 ml/h	15	Less than 0.1 ml
Level **1** @ 5 ml/h	2.5	
Level **5** @ 1 ml/h	More than 100	Less than 1.0 ml
Level **5** @ 5 ml/h	21	

Note: Values are approximate and are determined using the method described in EN 60601-2-24 clause 51.6b using a Monoject 50 ml syringe and a 150 cm line (part number 0128-0122).

Note: Values are for a 50 ml syringe. Values are reduced for smaller syringes.

Accessories

Flo-Safer™ extension sets	Length	Part number
PCA set with anti-syphon valve, non-return valve and J-loop	150 cm	0128-0121
Syringe extension sets	150 cm	0128-0122
	200 cm	0128-0198
Syringe extension sets with anti-syphon valve	150 cm	0128-0253
	200 cm	0128-0254
Polyethylene-lined syringe extension sets with anti-syphon valve	150 cm	0128-0257
	200 cm	0128-0258
Low-priming volume syringe extension set with anti-syphon valve	100 cm	0128-0259
Epidural syringe extension sets with anti-syphon valve (Yellow)	150 cm	0128-0261
	200 cm	0128-0262
Epidural syringe extension sets (Yellow)	150 cm	0128-0263
	200 cm	0128-0264

Software	Part number
Graseby Omnifuse Technician PC software	0151-0266
Omnifuse Drug Protocol Management System	0153-0084

Omnistack		Part number
Omnifuse pump stacking system		0156-0001
Wheelbase		0156-0096
Pole assembly for wheelbase	Long	0156-0097
	Short	0156-0098

Supported syringe brands and sizes

Brand/Size	2	3	5	10	20	30	50/60
BD Plastipak	✓		✓	✓	✓	✓	✓
BD Precise					✓		✓
Braun Euroject							✓
Braun Omnifix	✓		✓	✓	✓	✓	✓
Braun Perfusor							✓
Codan	✓		✓	✓	✓		✓
Faulding Pharmaject*							✓
Fresenius Injectomat							✓
IMS Pumpjet*						✓	
JMS		✓	✓	✓	✓	✓	✓
Monoject	✓		✓	✓	✓	✓	✓
Nipro		✓	✓	✓	✓	✓	✓
Terumo		✓	✓	✓	✓	✓	✓
TOP	✓		✓	✓	✓	✓	✓
Zeneca PFS*							✓

* Pre-filled syringe

Note: The syringes shown in the ***Supported syringe brands and sizes*** table are supported by Omnifuse with their critical dimensions but may not achieve the stated accuracy due to syringe variability (with the exception of the Braun Omnifix 50ml).

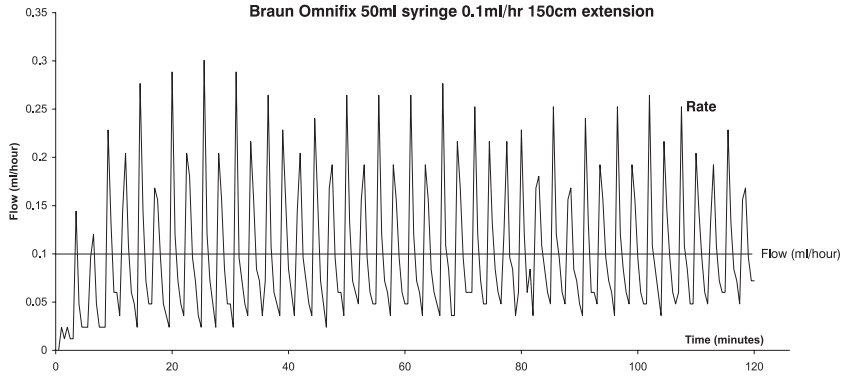
Symbols

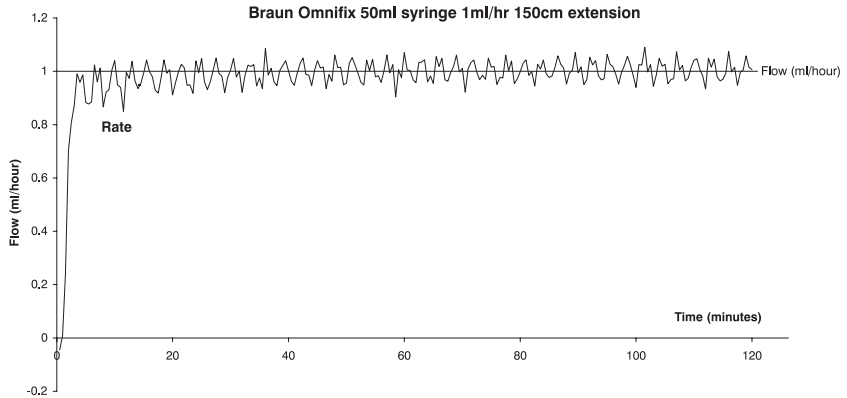
Symbol	Meaning
	The applied part is **Type CF**
	Identifies the **Potential Equalisation Terminal** located on the body of the pole clamp
~	The pump should be operated from an **AC power** source

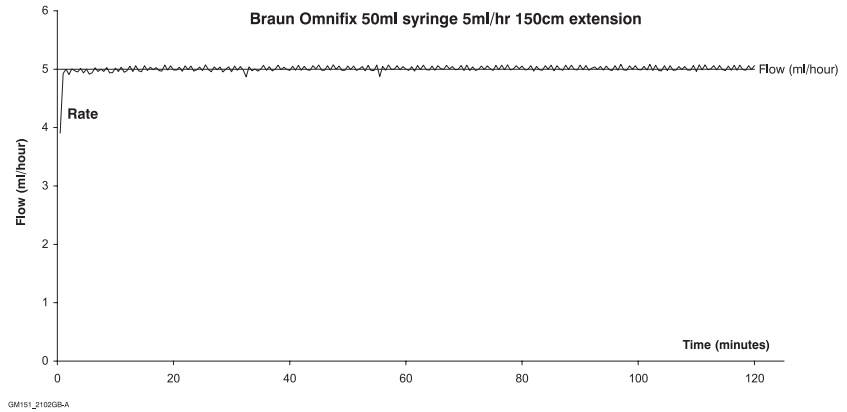
Standards

Electrical safety	Classified as Internally Powered Equipment: Class 1, Type CF insulation on all inputs
Fluid ingress protection	IPX4 Splash-proof
CE 0473 **CE marking**	The CE mark demonstrates that the pump conforms to the requirements of European Council Directive 93/42/EEC concerning medical devices. The number 0473 identifies the Notified Body under which the Quality Systems operated within Graseby Medical Ltd. are assessed
Design standards	EN60601-1, EN60601-1-2, EN60601-1-4, EN60601-2-24
Disposal	When the time comes to dispose of the pump, its batteries or any of its accessories, do so in the best way to minimise any negative impact on the environment. You may be able to use recycling or disposal schemes. To find out about these, contact your local waste disposal service. Separate any other parts of the equipment where arrangements can be made for their recovery; either by recycling or energy recovery. The only pump components which are potentially harmful enough to require separate disposal according to manufacturer's instructions or local regulations are: • Main batteries (lead acid) • Back-up battery on main PCB (lithium) • LCD display (contains harmful chemicals and may explode if incinerated) **Note:** Existing national or local regulations concerning waste disposal must take precedence over the above advice
Patents	Applied for

Startup curves







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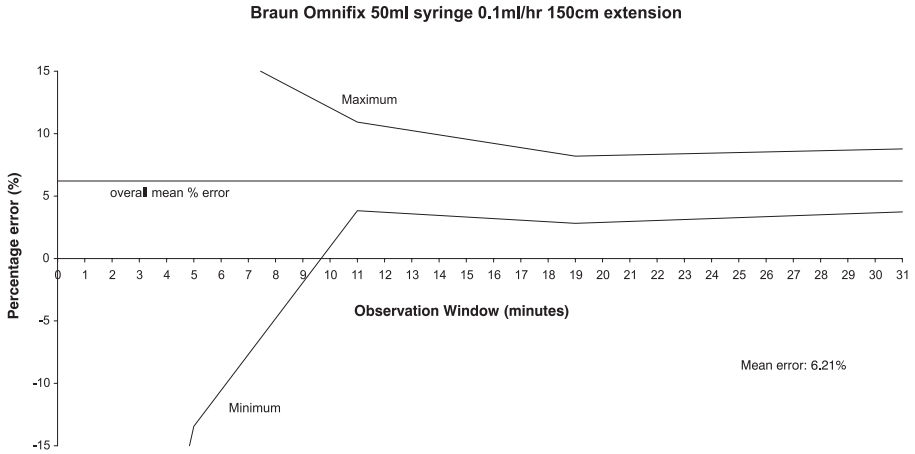
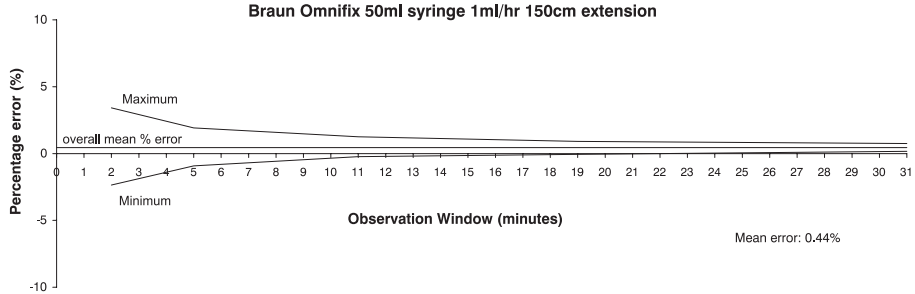
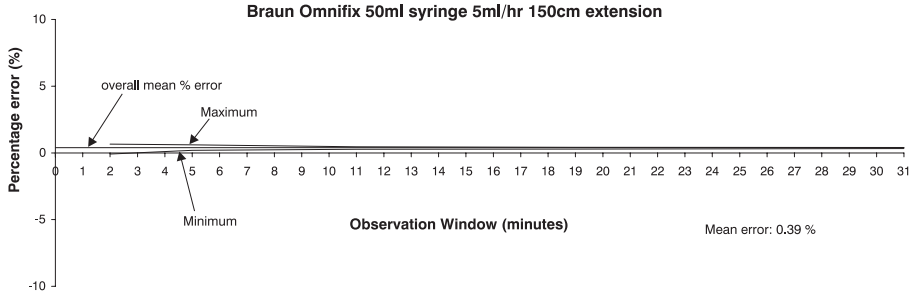
Trumpet curves







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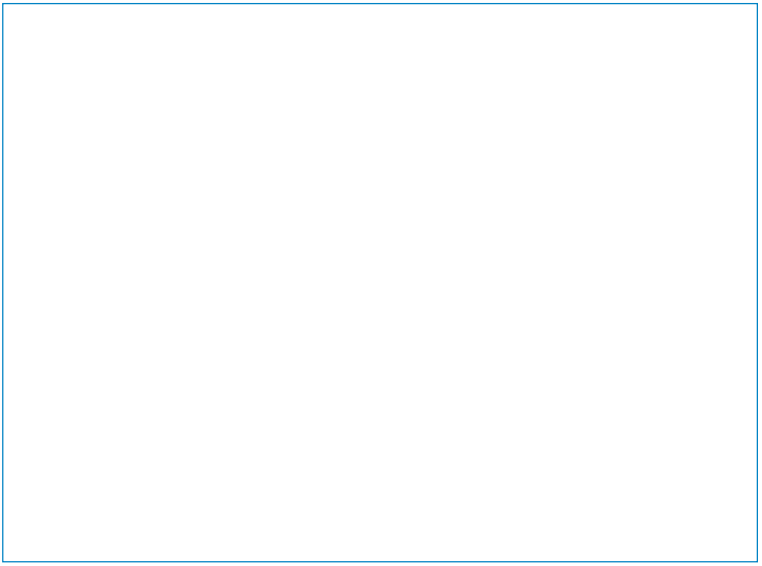
For further information, please contact your local distributor or
Graseby Medical direct on +44 (0)1923 246434



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